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<b>14. ABSTRACT</b>  Job burnout and secondary trauma are serious issues for military behavioral health providers who are continually exposed to extensive traumatic material on an on-going basis. Job burnout and STS potentially increase turnover among mental health providers, decrease positive clinical outcomes with clients, and have negative consequences for mission readiness for soldiers.  SupportNet aimed to assess the level of secondary trauma and job burnout among military behavioral health providers and to provide a pilot support system for providers working at with military trauma survivors. In the final year of the project, we completed the RCT data analysis and disseminated our findings to key stakeholders.					
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## **1. INTRODUCTION**

The mental health issues facing our military community are severely straining the existing behavioral health system creating unique challenges for providers. The literature on secondary trauma and burnout in military behavioral health providers (e.g., Bride & Figley, 2009; Tyson 2007) is limited in two substantive ways. First, empirical evidence has not utilized a theoretically based approach to understand the adaptive processes involved in managing the extensive psychological challenges of treating combat exposed soldiers with multiple psychological and physical disorders. Second, the literature on empirically evaluated prevention programs for secondary trauma and burnout is virtually non-existent. Negative outcomes such as secondary trauma and burnout in mental health professionals working with highly traumatized populations has significant implications not only for the providers, but also their clients, and the system in which they work (Baird & Kracen, 2006; Sabin-Farrell & Turpin, 2002; Sexton, 1999). The SupportNet project was the first effort of which we are aware that approached these issues from a scientific and theoretically based manner. Results from this project provide critical prevalence information, theoretical development, and crucial support intervention data.

## **2. KEYWORDS**

Secondary traumatic stress, compassion fatigue, job stress, burnout, behavioral health providers, combat trauma.

## **3. ACCOMPLISHMENTS**

### **Major Goals of the Project:**

The primary goals for this project were:

**Goal 1:** We conducted an initial needs assessment to determine the level of secondary trauma and burnout in military mental health providers. We accomplished this by utilizing the most reliable and valid measures available in the literature to measure negative and positive emotional states in this population. Military mental health providers from different U.S. military installations and the community completed an online assessment including secondary traumatic stress, burnout, compassion satisfaction, coping self-efficacy, supervisor support, general social support, indirect trauma exposure, personal trauma exposure, number of cases, percent of PTSD and TBI cases, case graphic detail, quantitative job demands, number of years seeing trauma clients, and basic demographics.

**Goal 2:** We evaluated the utility of social cognitive theory as a framework for understanding the burnout/secondary traumatic stress process for military mental health providers. Specifically, we tested the longitudinal predictive power of coping self-efficacy, a key social cognitive theory variable, in explaining individual variation in negative and positive emotional states (e.g., burnout, STS, and compassion satisfaction). By sampling providers at two time points (6 months apart) we were able to determine

predictive capacity of multiple predictors. We completed a set of moderated mediation analyses to evaluate the utility of our theoretical model that includes key personal (e.g., coping self-efficacy) and social resources as mediating mechanism between critical job demands and subsequent psychological outcomes.

**Goal 3:** We developed and evaluated a theoretically based support system called SupportNet to empower behavioral health providers in developing critical self-assessment skills, self-regulatory abilities, and support seeking capacities. A multifaceted system based on social cognitive theory was developed to provide comprehensive support and skill enhancement to reduce negative emotional states and promote positive coping outcomes. The program combined individualized clinical support via coaching with an anonymous website that utilized a social media platform to promote self-empowerment through self-care goal setting, social support enhancement, professional practice resources, and self-care exercises.

### **Accomplishments for Objective 1**

- 1. We reviewed the literature on secondary traumatic stress and job burnout and their predictors. The theoretical framework for the SupportNet study is rooted within the Job Demands-Resources model (Bakker & Demerouti, 2007). This model explains how job demands and resources independently and in the interaction with each other may predict negative and positive work-related well-being outcomes, such as job burnout and work engagement. We applied this model to the population of behavioral health providers working with the military trauma. One of the many advantages of the JD-R model refers to the fact that all key components of this model (job demands, resources, and health/well-being) should be adjusted to the specificity of work tasks, work environment, and the type of investigated group of workers. Following these requirements we identified work stressors and indirect exposure to trauma as the key components of mental health providers' job demands. Social support and self-efficacy were indicated as the psychosocial resources, with self-efficacy acting as a mediating factor. Those demands and resources are considered as critical predictors of the following outcomes: job burnout, work engagement, secondary traumatic stress, and secondary posttraumatic growth. The theoretical model is presented in Appendix 1.*
- 2. We mobilized researchers across the world to publish their results in a special issue of the APA journal, "Psychological Services". Dr. Lisa Kearney, Associate Editor of the APA journal "Psychological Services" together with Drs. Bret Moore, Jeffrey Burk, and two Support Net Project leaders Charles Benight and Roman Cieslak initiated a special section on secondary trauma and job burnout. The call for manuscripts is presented in Appendix 2.*

3. *We reviewed the literature regarding available military programs for compassion fatigue and resiliency, non-military web-based interventions, and evaluation models for web-based intervention designs. (Appendix 3)*
  
4. *Our external program evaluator reviewed the literature on evaluation models pertinent to interventions for mental health caregivers in both the process and outcome domains in general and with military populations in specific (Appendix 4).*
  
5. *Time 1 and Time 2 surveys were developed (completed via the internet versions) to longitudinally assess secondary traumatic stress and job burnout in military behavioral health providers. With a multidisciplinary team that included an external evaluator (Dr. Robert Durham), and an extended research team (Drs. Alan Peterson and Bret Moore), the following list of measures were used for Time 1 and Time 2 surveys (see Appendices 5 and 6, respectively, for these surveys):*
  - ICAWS, Interpersonal Conflict at Work Scale (Spector & Jex, 1998), 4 original items, plus 1 new item;
  - OCS, Organizational Constraints Scale, (Spector & Jex, 1998), 11 items, plus 1 new item;
  - QWI, Quantitative Workload Inventory (Spector & Jex, 1998), 5 original items;
  - STES, Secondary Trauma Exposure Scale, 10 items plus 5, (Benight & Cieslak, unpublished);
  - RCS, Regressive Coping Scale, developed by C. Benight to measure behavioral component of coping with stress, 25 items;
  - MSPSS, Multidimensional Scale of Perceived Social Support (Zimet, Dehlem, Zimet, & Farley, 1988), 12 items;
  - QPSNordic – two subscales to measure support from supervisors and coworkers (Wännström, Peterson, Åsberg, Nygren, & Gustavsson, 2009), 5 items;
  - WSBMSES, Work Stress and Burnout Management Self-Efficacy Scale (Lua, Cieslak, & Benight, unpublished), 28 items;
  - STSES, Secondary Trauma Self-Efficacy Scale (Cieslak & Benight, unpublished), 9 items;
  - STSS, Secondary Traumatic Stress Scale (Bride, Robinson, Yegidis, & Figley, 2004), 17 items (intrusion, avoidance, and arousal symptoms associated with indirect exposure);
  - OLBI, Oldenburg Burnout Inventory, (Halbesleben & Demerouti, 2005), 16 items (exhaustion and disengagement);
  - PTCI, Post-traumatic Cognitions Inventory (Foa, Ehlers, Clark, Tolin, & Orsill, 1999), 14 selected items;
  - PTGI-SF, Posttraumatic Growth Inventory – Short Form (Cann, Calhoun, Tedeschi, Taku, Vishnievsky, Triplett, & Danhauer, 2010), 10 items;

- UWES, Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006), 9 items.

6. *Processes for participants were developed to reach a wide community of military behavioral health providers. Data were collected by means of the online survey. An e-mail with information about the SupportNet study and a link to the survey was sent to on-post and off-post behavioral health providers working with military patients. The off-post providers (i.e., located in the civilian community) received an invitation to the study through an online newsletter sent by TriWest Healthcare Alliance, an organization that manages health benefits for military patients and their families. The on-post providers (i.e., working within military installations) were contacted by e-mail sent by the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, CO and by the Psychology Consultant to the U.S. Army Surgeon General.*

*Of 339 participants who initially consented to the study, 224 (66%) met the inclusion criteria (i.e., working at least one year as a clinical psychologist, counselor, or social worker; providing services for a military population; being indirectly exposed to trauma through work with patients) and completed the survey. The average age was 48.92 (SD = 13.04) years and the average length of work experience was 16.40 (SD = 10.42) years. The participants were predominantly women (67%), with doctorate (54%) or master's degrees (46%), working full-time (78%) or part-time (22%) as clinical psychologists (45%), counselors (31%) or social workers (23%). Slightly more than a half of the sample was serving as on-post (57%) and the rest as off-post (43%) behavioral health providers. The sample was almost equally split between those who did and did not have any military experience (44% and 56%, respectively). One fifth of the sample (19%) had deployed to a combat zone at least once. They reported utilizing combinations of various therapeutic approaches with a majority reporting the use of Cognitive Behavioral Therapy (CBT, 90%), followed by Cognitive Processing Therapy (CPT, 42%), Prolonged Exposure (PE, 30%), and Eye Movement Desensitization and Reprocessing (EMDR, 29%).*

7. *A book chapter on job burnout was published in a book dedicated to military psychologists. This chapter is included in Appendix 7.*

Benight, C.C & Cieslak, R. (2013). Professional Burnout. In B. A. Moore & J. E. Barnett (Eds.). *Military Psychologists' Desk Reference*. New York: Oxford University Press. [http://global.oup.com/academic/product/military-psychologists-desk-reference-9780199928262?q=Military Psychologists' Desk Reference&lang=en&cc=](http://global.oup.com/academic/product/military-psychologists-desk-reference-9780199928262?q=Military%20Psychologists%27%20Desk%20Reference&lang=en&cc=)

8. *A meta-analytic paper on the relationship between secondary traumatic stress and job burnout was published in a special section for Secondary Trauma and Burnout in Psychological Services (Impact Factor: 1.075) in February, 2014. Our systematic review of the literature yielded 41 original studies, reporting data from 8,256 workers. The meta-analysis indicated the association between job burnout and secondary traumatic stress was strong (weighted  $r = .69$ ). This paper is presented in Appendix 8. This paper was the most read paper for Psychological Services in 2014.*

Cieslak, R., Shoji, K., Douglas, A., Melville, E., Luszczynska, A., & Benight, C. C. (2014). A meta-analysis of the relationship between job burnout and secondary traumatic stress among workers with indirect exposure to trauma. *Psychological Services, 11*, 75-86. doi:10.1037/a0033798

9. *We presented a paper on a meta-analysis of the relationship between secondary traumatic stress and job burnout, at the European Society for Traumatic Stress Studies in June, 2013 in Bologna, Italy. This paper is presented in Appendix 9.*

Cieslak, R., Shoji, K., Benight, C. C., & Luszczynska, A. (June, 2013). The relationship between secondary traumatic stress and job burnout: A meta-analysis.

10. *We presented a paper at the annual conference of the International Society for Traumatic Stress Studies in November 2013 in Philadelphia, PA. This paper is presented in Appendix 10.*

Benight, C. C., Cieslak, R., Anderson, V., Moore, B., & Peterson, A. (2013, November). Secondary Traumatic Stress among Army Mental Health Providers: Prevalence and its Work- and Exposure- Related Correlates.

## **Accomplishments for Objective 2**

1. *We authored a research paper on the development of the Secondary Trauma Self-Efficacy Scale, which was accepted for publication in Psychological Assessment (Impact Factor: 2.993). The paper presents a new method that had to be created to assess a key resilience component important in coping with the effects of indirect exposure to trauma. This paper is presented in Appendix 11.*

Cieslak, R., Shoji, K., Luszczynska, A., Taylor, S., Rogala, A., & Benight, C. C. (2013, May 6). Secondary Trauma Self-Efficacy: Concept and Its Measurement. *Psychological Assessment*. Advance online publication. doi: 10.1037/a0032687

2. *We published a paper on the prevalence of secondary trauma among behavioral health providers working with military personnel in November, 2013 in the Journal of Nervous and Mental Disease (Impact Factor: 1.842). The prevalence of secondary traumatic stress among 224 behavioral health practitioners working with the military-related trauma was 19.2%. Personal history of trauma, complaints about having too many patients, and more negative appraisals of the impact caused by an indirect exposure to trauma were associated with higher frequency of secondary traumatic stress symptoms. A meta-analysis of existing studies showed the severity of intrusion, avoidance, and arousal symptoms of secondary traumatic stress was similar across various groups of professionals indirectly exposed to trauma (e.g., mental health providers, rescue workers, social workers). This paper is presented in Appendix 12.*

Cieslak, R., Anderson, V., Bock, J., Moore, B. A., Peterson, A. L. & Benight, C. C. (2013). Secondary traumatic stress among mental health providers working with the military: Prevalence and its work- and exposure-related correlates. *Journal of Nervous and Mental Disease, 201*, 917-925. doi: 10.1097/NMD.0000000000000034

3. *We authored a paper on the mediating role of social support and secondary traumatic self-efficacy in the relationship between secondary traumatic stress and secondary traumatic growth, which was published online in Journal of Clinical Psychology (Impact Factor = 2.12) in January, 2014. This study tested two alternative hypotheses involving social support and self-efficacy as mediators in a longitudinal design. This paper consisted of 2 studies involving 115 military behavioral healthcare providers in the U.S. and 189 workers exposed to secondary trauma who completed both Time 1 and Time 2 online surveys. In both studies, results supported a cultivation hypothesis, which posits that self-efficacy enhances social support, which further facilitates secondary traumatic growth in the long term. This paper is presented in Appendix 13.*

Shoji, K. Bock, J., Cieslak, R., Zukowska, K, Luszczynska, A., & Benight, C. C. (2014). Cultivating secondary traumatic growth among healthcare workers: The role of social support and self-efficacy. *Journal of Clinical Psychology, 70*, 831-846. DOI: 10.1002/jclp.22070

4. *We presented a poster on the development and validation of a secondary trauma self-efficacy scale at the European Health Psychology Society Annual Conference in July, 2013 in Bordeaux, France. This poster is presented in Appendix 14.*

Rogala, A., Cieslak, R., Shoji, K., Luszczynska, K., Taylor, S., & Benight, C. C. (July, 2013). *Secondary trauma self-efficacy scale: Psychometric evaluation.*

5. *We presented a poster at the APA Annual Conference in August, 2013 describing a study that examined the effects of social support and self-efficacy on secondary traumatic stress. This poster is presented in Appendix 15.*

Bock, J., Shoji, K., Cieslak, R., & Benight, C. C. (August, 2013) Effects of social support and self-efficacy on secondary traumatic growth.

6. *We presented a poster at the APA Annual Conference in August, 2013 describing a study that examined the indirect effects of job burnout on job engagement. This poster is presented in Appendix 16.*

Shoji, K., Luther, E., Cieslak, R., Smoktunowicz, E., & Benight, C. C. (August, 2013) Indirect effect of job burnout on job engagement.

7. *We presented a paper at the Scientific Conference of the Australian Society for Behavioural Health and Medicine Annual Conference in February, 2014 in Auckland, New Zealand. This paper is presented in Appendix 17.*

Cieslak, R., Shoji, K., Rogala, A., Smoktunowicz, E., & Benight, C. C. (February, 2014) A meta-analysis of the relationship between self-efficacy and job burnout.

8. *A paper was published in Anxiety, Stress, and Coping Journal (Impact Factor = 1.78) describing a study aimed at systematically reviewing and meta-analyzing the strength of associations between self-efficacy and job burnout (the global index and its components). We investigated whether these associations would be moderated by: (a) the type of measurement of burnout and self-efficacy (b) the type of occupation (c) the number of years of work experience and age, and (d) culture. Significant self-efficacy--burnout relationships were observed across countries, although the strength of associations varied across burnout components, participants' profession, and their age. This paper is presented in Appendix 18.*

Shoji, K., Cieslak, R., Smoktunowicz, E., Rogala, A., Luszczynska, A. & Benight, C. C. (2015). Associations between job burnout and self-efficacy: A meta-analysis. *Anxiety, Stress, and Coping*.  
<http://dx.doi.org/10.1080/10615806.2015.1058369>

### **Accomplishments for Objective 3**

1. *We developed an intervention model that identifies key functional areas for improving self-regulatory abilities (using mindfulness, stress reduction, and self-*

*efficacy skills enhancement) and social support (both personal and professional). The intervention design and rationale was presented at the American Telemedicine Association Conference in April 2012. The poster is included in Appendix 19.*

2. *Developed functional requirements and system architecture specification for BlueSun, Inc., the proposed subcontractor. The Functional Requirements document is attached as Appendix 20.*
3. *Our external program evaluator conducted an internal qualitative process evaluation of the SupportNet team. Further, after having already reviewed the literature on process and outcome evaluation relevant to interventions for general and military mental health caregivers, the evaluation team developed a process and outcome evaluation plan for the RCT of the SupportNet intervention. This is included in Appendix 21.*
4. *We facilitated six, on-site Focus Group meetings at Fort Carson in Colorado Springs, CO. The results of the focus group are presented in Appendix 22.*
5. *Completed a Coaching Manual that can be used as a guideline for other groups and organizations looking to address burnout in their workplace. This manual is included in Appendix 23.*
6. *Completed a Web Application for the RCT that can also be used by other groups and organizations looking to address burnout in their workplace. Screen shots are included in Appendix 24.*
7. *We completed a randomized controlled trial (RCT) to test the effectiveness of SupportNet, in October, 2014. This RCT was the first to evaluate an intervention for burnout in military behavioral health providers.*
8. *A poster was presented at APA describing the rise in the amount of internet-mediated/ eHealth interventions. High rates of attrition and low adherence have been present within eHealth intervention research. There is a limited base of literature highlighting individual characteristics related to attrition and adherence. The current study sought to standardize the eHealth readiness scale, implemented to examine individual characteristics assessing participant readiness, and adherence. Results showed the eHealth readiness scale items demonstrate good internal consistency and a stable one-factor solution and indicated the eHealth readiness scale is a sufficient criterion valid measure of self-efficacy and ease with technology usage. This poster is included in Appendix*

25.

Bhalla, A., Al-Tabaa, N., McDonald, J.M., Hanneman, S., & Durham, R.L. (2014, August). Psychometric examination of a readiness scale for an RCT of an online intervention. Presented at the 122nd American Psychological Association Annual Convention, Washington D.C.

9. *A poster was presented at the International Society for Research on Internet Interventions (ISRII) describing a study that investigated the relationship between web intervention engagement and the reduction of job burnout in a randomized controlled trial. We examined both subjective and objective measures of engagement and how they affect the reduction of job burnout. Objective engagement measures were generated based on participants' user history. Results showed small to medium negative correlations between engagement and job burnout. The number of unique pages visited was significantly correlated with subjective engagement measures. Patterns that emerged for correlations among job burnout and subjective engagement measures were discussed. This poster is included in Appendix 26.*

Shoji, K., Yeager, C., Gibson, F.W., Cieslak, R., Bock, J., Decker, L., Anderson, V., & Benight, C. C. (2014, October). SupportNet for military behavioral healthcare providers: Website engagement and job burnout. Poster session presented at the annual conference of the International Society for Research on Internet Intervention. Valencia, Spain.

10. *A poster presented at Med 2.0 describing a study that examined the effectiveness of the SupportNet intervention, designed to reduce job burnout among behavioral healthcare providers for U.S. military personnel in a randomized controlled trial (RCT). Results showed a significant reduction in job burnout among participants who used SupportNet with a coaching component. The results of present study showed participants who used the SupportNet with coaching guidance reduced job burnout after the 8-week intervention more than the other group. Job burnout among those who participated without coach's guidance was not different between pre- and post-RCT. These results indicated that the coaching component with online support was effective in this population. Behavioral healthcare providers may prefer face-to-face interaction rather than working solely online. This poster is included in Appendix 27.*

Shoji, K., Gibson, F. W., Cieslak, R., Anderson, V., Bock, J., Decker, L., Yeager, C., & Benight, C. C. (2014, November). SupportNet: Preliminary results of a randomized controlled trial. Poster session presented at the annual conference of the Medicine 2.0. Maui, HI.

11. *A poster was presented at ISTSS describing a study that assessed the psychometric properties of the eHealth readiness scale in an RCT of the SupportNet intervention, which aimed to reduce burnout and secondary-traumatic stress in military mental health providers. Results demonstrate scale items to have a good internal consistency and a stable one-factor solution. Contrary to the hypothesis, results did not illustrate any significant relation between eHealth readiness and time spent on the SupportNet website. Thus predictive validity was unable to be established for the scale. This poster is included in Appendix 28.*

Bhalla, A. Durham, R.L., Yaeger, C., Luther, E., Gibson, F., & Benight, C.C., (2014, November). *The psychometric validation of a readiness scale for participants in an online intervention for burnout and secondary traumatic stress.* Poster presented at the 2014 International Society for Traumatic Stress Studies annual conference, Miami, FL.

12. *A poster presented at ISTSS describing a study that examined the role of a sexual assault history on the development of secondary traumatic stress and job burnout. Although all mental health providers are at risk for experiencing the effects of secondary traumatic stress and job burnout, those with a sexual assault history may be even more sensitive to this stress and more likely to develop job burnout. Job burnout self-efficacy may serve as a mediating mechanism between secondary traumatic stress and job burnout because a belief in your ability to manage stressors often changes how challenges and goals are managed. The results suggest that job burnout self-efficacy serves as a self-regulatory role by which secondary traumatic stress relates to job burnout in providers without a sexual assault history. For those with a sexual assault history, the distress caused by the trauma may override the buffering effect that job burnout self-efficacy has on the relationship between secondary traumatic stress and job burnout. This poster is included in Appendix 29.*

Boesdorfer, G., Nichols, C., Shoji, K., Benight, C. C., Gibson, F. (2014, November). Effects of sexual assault history on the relationship between secondary traumatic stress, job burnout self-efficacy, and burnout for military mental health providers. Poster session presented at the annual conference of the International Society for Traumatic Stress Studies. Miami, FL.

13. *A paper was presented at ESTSS describing a meta-analysis on the relationship between job burnout and self-efficacy showed that a systematic literature search found 53 original studies meeting inclusion and evaluation criteria. Preliminary results show there is a moderate association between job burnout and self-efficacy. The results suggested that, due to high correlations between job burnout and secondary traumatic stress, there is a substantial likelihood that a professional exposed to secondary trauma would report similar levels of job burnout and secondary traumatic stress, particularly if job burnout and secondary traumatic stress were measured within the framework of compassion*

*fatigue. This poster is included in Appendix 30.*

Cieslak, R., Shoji, K., Lesnierowska, M., Smoktunowicz, E., Benight, C. C. (2015, June). Which comes first: Job burnout or secondary traumatic stress? Paper presented at the annual conference of the European Society for Traumatic Stress Studies. Vilnius, Lithuania.

14. *Finalized the final dissemination report on SupportNet Findings entitled: SupportNet: Helping Those Who Help Our Military. This report was mailed to over 100 key military organizations representing our military stakeholders. This report is included in Appendix 31.*

15. *A paper was published in Frontiers: Organizational Psychology (Impact Factor = 2.56) on the role of self-efficacy in disengagement, a factor in job burnout. This paper is included in Appendix 32.*

Rogala, A., Shoji, K., Luszczynska, A., Kuna, A., Yeager, C., Benight, C., & Cieslak, R. (2015). From exhaustion to disengagement via self-efficacy change: Findings from two longitudinal studies among human services workers. *Frontiers: Organizational Psychology*, 6, 2032. <http://doi.org/10.3389/fpsyg.2015.02032>

16. *A poster was presented at a key conference on psychological trauma, ISTSS, in November 2015. This poster provided a meta-analysis of interventions used to decrease burnout in behavioral health and medical professionals. This poster is included in Appendix 33.*

Stearns, S. & Shoji, K. (2015). A Meta-Analysis of Interventions Used to Decrease Burnout in Behavioral Health and Medical Providers. Poster presented at the annual conference of the International Society for Traumatic Stress Studies. New Orleans, LA.

17. *A poster was presented at a key conference on psychological trauma, ISTSS, in November 2015. This poster provided a meta-analysis of engagement in web interventions. This poster is included in Appendix 34.*

Yeager, C., Stautz, K., Mullings, A., Nichols, C., Streeb, N., & Shoji, K. (2015). A Meta-analytic Review of Trauma Outcomes and Web Intervention Engagement. Poster presented at the annual conference of the International Society for Traumatic Stress Studies. New Orleans, LA.

18. *A paper was published in PLOS-1 (Impact Factor = 3.23) on the directionality of burnout with secondary traumatic stress. This paper is included in Appendix 35*

Shoji, K., Lesniewska, M., Smoktunowicz, E., Bock, J., Luszczynska, A., Benight, C. C., & Cieslak, R. (2015). What comes first, job burnout or secondary traumatic stress? Findings from two longitudinal studies from the U.S. and Poland. *PLOS ONE*. 10(8): e0136730. doi:10.1371/journal.pone.0136730

19. *Finalized a book contract on the SupportNet project with the publisher Palgrave/MacMillan. The book will provide a comprehensive presentation of the SupportNet project and its findings. Implications for military mental health providers and other health care personnel will be included.*

#### **4. IMPACT**

##### **Impact on the Development of the Principal Discipline(s) of the Project**

The SupportNet project was the first systematic study of burnout and secondary traumatic stress in military mental health providers. The data from this project provides a critical foundation for understanding the scope of the burnout and secondary traumatic stress problem within military mental health providers as well as an intervention for supporting these clinicians.

The theoretical model tested by the SupportNet project has significantly contributed to the field of secondary traumatic stress and burnout in health care providers. Several empirical papers have been published that demonstrate the primary mechanisms that predict secondary traumatic stress and burnout. In addition, we identified a critical finding that burnout leads to higher levels of STS and not the other way around. This has important theoretical and practical implications.

Our intervention approach provided a novel intervention for burnout that includes a social media based web intervention as well as a detailed coaching model to help providers manage the challenges of a highly demanding complex clinical landscape. This offers a new way forward for helping mental health providers who work with military clients as well as those who work with a more general trauma clientele.

##### **Impact on Other Disciplines**

Our SupportNet findings do offer some evidence around the key mechanisms leading to burnout and secondary traumatic stress that has implications for health care providers, first responders, and others who work within traumatic stress settings.

Our specific finding that burnout can make providers more vulnerable to secondary traumatic stress has important practical implications for many other disciplines.

## **Impact on Technology Transfer**

The SupportNet website is going to be transferred for sale through BlueSun, Inc (Bluesunsupport.com). This company was developed by the P.I. Dr. Charles C. Benight as part of another Science Technology Transfer Grant through NIMH and is now operating as a web-support system company for traumatic stress. The SupportNet website provides an important extension to the current offerings at BlueSun and provides new potential market segments related to secondary trauma and burnout in health care providers.

## **Impact on Society Beyond Science and Technology**

The SupportNet project provides important information on the impact our health care system is absorbing following over a decade of war. This is important in relation to public policy and health care planning.

## **5. CHANGES/PROBLEMS**

### **Changes in Approach and Personnel**

There were two changes during the course of the grant: one to the approach and one in our personnel.

- During the RCT, we modified our recruitment strategy (with IRB approval) to include military behavioral health providers both on- and off-post. This was due to an inadequate response from the population of our primary site. We believe that people who are experiencing burnout may find it difficult to participate in future research.
- In terms of personnel, the position of Research Director was replaced twice on the project due to individuals in these positions vacating this role for other job opportunities outside the University of Colorado. Although this did not affect the overall budget for personnel, it did cause delays in completing the grant objectives within the original timeframe.

## **6. PRODUCTS**

### **Publications, Conference Papers, and Presentations**

We published a total of 7 peer-reviewed articles, 15 conference papers and presentations, 1 book chapter, and 8 briefings for leadership at Fort Carson, CO. Please see appendices for copies of articles and presentations. Finally, we are completing a book titled “Secondary Trauma and Burnout in Military Behavioral Health Providers: Beyond the Battlefield” by Palgrave/Macmillan publishers.

1. Bhalla, A., Al-Tabaa, N., McDonald, J.M., Hanneman, S., & Durham, R.L. (2014, August). Psychometric examination of a readiness scale for an RCT of an online intervention. Presented at the 122nd American Psychological Association Annual Convention, Washington D.C.
2. Bhalla, A. Durham, R.L., Yaeger, C., Luther, E., Gibson, F., & Benight, C.C., (2014, November). The psychometric validation of a readiness scale for participants in an online intervention for burnout and secondary traumatic stress. Poster presented at the 2014 International Society for Traumatic Stress Studies annual conference, Miami, FL.
3. Bhalla, B.A., Teel, M., & Durham R. (2014) Process and outcome evaluation for SupportNet. Unpublished manuscript. University of Colorado Colorado Springs, Colorado Springs, CO.
4. Benight, C.C & Cieslak, R. (2013). Professional Burnout. In B. A. Moore & J. E. Barnett (Eds.). *Military Psychologists' Desk Reference*. New York: Oxford University Press. [http://global.oup.com/academic/product/military-psychologists-desk-reference-9780199928262?q=Military Psychologists' Desk Reference&lang=en&cc=](http://global.oup.com/academic/product/military-psychologists-desk-reference-9780199928262?q=Military%20Psychologists%27%20Desk%20Reference&lang=en&cc=)
5. Benight, C. C., Cieslak, R., Anderson, V., Moore, B., & Peterson, A. (2013, November). Secondary Traumatic Stress among Army Mental Health Providers: Prevalence and its Work- and Exposure- Related Correlates. International Society for Traumatic Stress Studies. Philadelphia, PA.
6. Bock, J., Shoji, K., Cieslak, R., & Benight, C. C. (August, 2013) Effects of social support and self-efficacy on secondary traumatic growth. Poster presented at the American Psychological Association Annual Conference, Honolulu, Hawaii.
7. Boesdorfer, G., Nichols, C., Shoji, K., Benight, C. C., Gibson, F. (2014, November). Effects of sexual assault history on the relationship between secondary traumatic stress, job burnout self-efficacy, and burnout for military mental health providers. Poster session presented at the annual conference of the International Society for Traumatic Stress Studies. Miami, FL.
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9. Cieslak, R., Shoji, K., Benight, C. C., & Luszczynska, A. (June, 2013). The relationship between secondary traumatic stress and job burnout: A meta-

analysis. Paper presented at the 13<sup>th</sup> Annual European Conference on Traumatic Stress, Bologna, Italy.

10. Cieslak, R., Shoji, K., Douglas, A., Melville, E., Luszczynska, A., & Benight, C. C. (2014). A meta-analysis of the relationship between job burnout and secondary traumatic stress among workers with indirect exposure to trauma. *Psychological Services*, 11, 75-86. doi:10.1037/a0033798
11. Cieslak, R., Shoji, K., Lesnierowska, M., Smoktunowicz, E., Benight, C. C. (2015, June). Which comes first: Job burnout or secondary traumatic stress? Paper presented at the annual conference of the European Society for Traumatic Stress Studies. Vilnius, Lithuania.
12. Cieslak, R., Shoji, K., Luszczynska, A., Taylor, S., Rogala, A., & Benight, C. C. (2013, May 6). Secondary Trauma Self-Efficacy: Concept and Its Measurement. *Psychological Assessment*. Advance online publication. doi: 10.1037/a0032687
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19. Shoji, K., Luther, E., Cieslak, R., Smoktunowicz, E., & Benight, C. C. (August, 2013) Indirect effect of job burnout on job engagement. Poster presented at the American Psychological Association Annual Conference, Honolulu, Hawaii.
20. Shoji, K., Yeager, C., Gibson, F.W., Cieslak, R., Bock, J., Decker, L., Anderson, V., & Benight, C. C. (2014, October). SupportNet for military behavioral healthcare providers: Website engagement and job burnout. Poster session presented at the annual conference of the International Society for Research on Internet Intervention. Valencia, Spain.
21. Stearns, S. & Shoji, K. (2015). A Meta-Analysis of Interventions Used to Decrease Burnout in Behavioral Health and Medical Providers. Poster presented at the annual conference of the International Society for Traumatic Stress Studies. New Orleans, LA.
22. Yeager, C., Stautz, K., Mullings, A., Nichols, C., Streeb, N., & Shoji, K. (2015). A Meta-analytic Review of Trauma Outcomes and Web Intervention Engagement. Poster presented at the annual conference of the International Society for Traumatic Stress Studies. New Orleans, LA.
23. Shoji, K., Lesnierowska, M., Smoktunowicz, E., Bock, J., Luszczynska, A., Benight, C. C., & Cieslak, R. (2015). What comes first, job burnout or secondary traumatic stress? Findings from two longitudinal studies from the U.S. and Poland. *PLOS ONE*.

## 7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

### Individuals who have worked on the project

Name:	<i>Charles C. "Chip" Benight, PhD</i>
Project Role:	<i>Principle Investigator</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>10</i>

Contribution to Project:	<i>Provided oversight of all components of the grant and its related activities.</i>
Funding Support:	<i>This award</i>

Name:	<i>Valerie Anderson, PsyD</i>
Project Role:	<i>Clinical Director</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>25</i>
Contribution to Project:	<i>Provided oversight to the clinical intervention developed as a part of the grant. Supervised the program's therapists and served as one of the clinicians assessing and working with military therapists taking part in the program. Assisted with writing up study results.</i>
Funding Support:	<i>This award</i>

Name:	<i>Roman Cieslak, PhD</i>
Project Role:	<i>Research Director</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>20</i>
Contribution to Project:	<i>Provided oversight to all research activities on the grant as well as assisted with writing up study results.</i>
Funding Support:	<i>This award</i>

Name:	<i>Fred Gibson, PhD</i>
Project Role:	<i>Research Director</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>19</i>
Contribution to Project:	<i>Provided oversight of all components of the grant and its related activities.</i>
Funding Support:	<i>This award</i>

Name:	<i>Debbie Sagen, MA</i>
Project Role:	<i>Program Manager</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>4</i>
Contribution to Project:	<i>Responsible for daily operation of grant activities.</i>
Funding Support:	<i>This award</i>

Name:	<i>Robert Durham, PhD</i>
Project Role:	<i>Lead Evaluator, External Evaluation Team</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>6</i>
Contribution to Project:	<i>Led the external evaluation conducted on the project.</i>
Funding Support:	<i>This award</i>

Name:	<i>Judith Bock, PsyD</i>
Project Role:	<i>Clinical Therapist, Interim Research Director</i>
Researcher Identifier (e.g. ORCID ID):	N/A
Nearest person month worked:	33
Contribution to Project:	<i>Provided assistance with the development of the clinical intervention, the coaching during the RCT, and later provided project management support for the research activities as well as served as Interim Research Director and assisted with writing up and disseminating study results.</i>
Funding Support:	<i>This award</i>

Name:	<i>Lisa Decker, MA</i>
Project Role:	<i>Clinical Therapist</i>
Researcher Identifier (e.g. ORCID ID):	N/A
Nearest person month worked:	11
Contribution to Project:	<i>Provided assistance with the development of the clinical intervention and the coaching during the RCT.</i>
Funding Support:	<i>This award</i>

Name:	<i>Carolyn Yeager</i>
Project Role:	<i>Senior Application Software Engineer</i>
Researcher Identifier (e.g. ORCID ID):	N/A
Nearest person month worked:	11
Contribution to Project:	<i>Assisted with the design, development, configuration, coding, debugging, testing, technical decision making, and reporting for the technology portion of the clinical intervention program of the project, as well as writing up and disseminating study results.</i>
Funding Support:	<i>This award</i>

Name:	Al Glock
Project Role:	<i>Senior Application Software Engineer</i>
Researcher Identifier (e.g. ORCID ID):	N/A
Nearest person month worked:	5
Contribution to Project:	<i>Assisted with the design, development, configuration, coding, debugging, testing, technical decision making, and reporting for the technology portion of the clinical intervention program of the project.</i>
Funding Support:	<i>This award</i>

Name:	<i>Kotaro Shoji, PhD</i>
Project Role:	<i>Post Doctoral Fellow</i>
Researcher Identifier (e.g. ORCID ID):	N/A
Nearest person month worked:	21
Contribution to Project:	<i>Assisted with all aspects of the study design, implementation, and analysis, as well as writing up and disseminating study results.</i>
Funding Support:	<i>This award</i>

Name:	<i>Shaun Stearns, PhD</i>
Project Role:	<i>Post Doctoral Student</i>
Researcher Identifier (e.g. ORCID ID):	N/A
Nearest person month worked:	11
Contribution to Project:	<i>Assisted with aspects of the study implementation and analysis, as well as writing up and disseminating study results.</i>
Funding Support:	<i>This award</i>

Name:	<i>Marissa Teel</i>
Project Role:	<i>Graduate Research Student Assistant</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>9</i>
Contribution to Project:	<i>Supported the project researchers in all research aspects of project including participant survey development and analysis, development and implementation of the online web intervention tool, evaluation, meta analysis, literature reviews, and dissemination.</i>
Funding Support:	<i>This award</i>

Name:	<i>Emily Luther</i>
Project Role:	<i>Graduate Research Student Assistant</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>4</i>
Contribution to Project:	<i>Supported the project researchers in all research aspects of project including participant survey development and analysis, development and implementation of the online web intervention tool, evaluation, meta analysis, literature reviews, and dissemination.</i>
Funding Support:	<i>This award</i>

Name:	<i>Gina Boesdorfer</i>
Project Role:	<i>Graduate Research Student Assistant</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>5</i>
Contribution to Project:	<i>Supported the project researchers in all research aspects of project including participant survey development and analysis, development and implementation of the online web intervention tool, evaluation, meta analysis, literature reviews, and dissemination.</i>
Funding Support:	<i>This award</i>

Name:	<i>Arjun Bhalla</i>
Project Role:	<i>Graduate Research Student Assistant</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>9</i>
Contribution to Project:	<i>Supported the project researchers in all research aspects of project including participant survey development and analysis, development and implementation of the online web intervention tool, evaluation, meta analysis, literature reviews, and dissemination.</i>
Funding Support:	<i>This award</i>

Name:	<i>Crystal Nichols</i>
Project Role:	<i>Graduate Research Student Assistant</i>
Researcher Identifier (e.g. ORCID ID):	<i>N/A</i>
Nearest person month worked:	<i>2</i>
Contribution to Project:	<i>Supported the project researchers in all research aspects of project including participant survey development and analysis, development and implementation of the online web intervention tool, evaluation, meta analysis, literature reviews, and dissemination.</i>
Funding Support:	<i>This award</i>

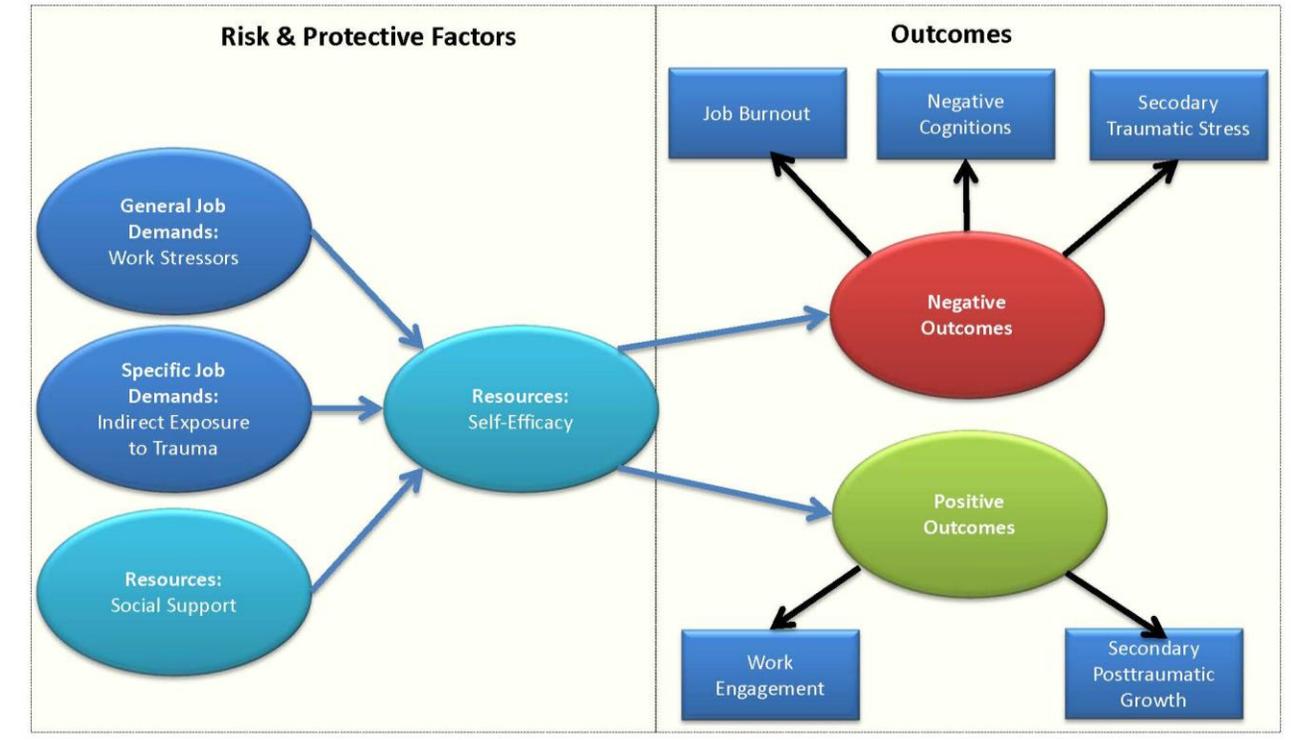
## 8. SPECIAL REPORTING REQUIREMENTS

*No special reporting requirements.*

## 9. APPENDICES

## Appendix 1

### Theoretical Model in the SupportNet Study



## Appendix 2

### Secondary Trauma and Burnout Open Call for Manuscripts *Psychological Services*

The editorial staff at the APA Division 18's journal, *Psychological Services*, is extending an invitation for manuscripts to be considered for a special section on secondary trauma and burnout. Drs. Charles Benight, Roman Cieslak, Bret Moore, and Jeffrey Burk have agreed to serve as our guest editors.

Understanding the complexity of psychological health for mental health providers is critically important. The challenges of secondary traumatic stress and burnout are frequently expressed, yet the issues are not clearly understood. Much of the research in this area has been non-empirical and without strong theoretically based frameworks. Additionally, the scientific evaluation of innovative intervention strategies to assist providers in managing these issues is clearly lacking. Therefore, this special section is devoted to enhancing the current knowledge base related to understanding secondary traumatic stress and/or burnout in mental health providers and what can be done to address these issues in public sector settings. Increasing numbers of Veterans experiencing posttraumatic stress disorder or traumatic brain injury, more frequently occurring and more destructive natural disasters, and decreasing budgets resulting in increasing workloads all can take a toll on the psychological health of treatment providers, making this a critical issue for those who work in the public sector.

This special section is focused on four primary areas related to secondary trauma and/or burnout.

- 1) Information on the prevalence of these issues in different contexts of mental health services is needed. Studies that utilize strong sampling strategies with solid measurement are particularly welcomed.
- 2) Identification of critical predictors for secondary trauma and/or burnout that take into account the various domains for mental health providers is essential. Studies that utilize solid measurements and research designs (longitudinal) are especially desired.
- 3) Investigations that focus on the theoretical frameworks related to the dynamic interplay between secondary trauma and burnout are critically needed. Theory based studies with clearly delineated hypotheses are particularly important.
- 4) Finally, information on differential approaches designed to reduce the effects of secondary trauma and/or burnout are desired. This area of research is in need of empirical studies that test well-designed support interventions. Such studies are strongly welcomed, especially as they relate to addressing burnout and/or secondary trauma of mental health providers in public sector settings.

Given the focal areas described above, as the APA Division dedicated to psychologists in public service, Division 18 welcomes manuscripts related to secondary trauma and/or burnout including but not limited to the following domains:

- Psychologists working on military installations, within community based settings, or in the Department of Veterans Affairs.
- Psychologists working within police and fire populations.
- Psychologists working in state hospitals.
- Psychologists working with the vulnerable and minority communities
- Forensic psychologists.

Meta-analytic papers, theoretical-based papers, and empirical papers are all welcomed for submission. To promote the utility of this special section, all papers submitted must have a clinical application section that outlines the importance of the findings for the health and wellbeing of public service psychologists. The deadline for receipt of papers for this special section is November 1, 2012. Please follow the Instructions to Authors information located on the *Psychological Services* website at: <http://www.apa.org/pubs/journals/ser/index.aspx>. Manuscripts must be submitted electronically through the Manuscript Submission Web Portal as described on the journal's website, here: [http://www.jbo.com/jbo3/submissions/dsp\\_jbo.cfm?journal\\_code=ser](http://www.jbo.com/jbo3/submissions/dsp_jbo.cfm?journal_code=ser)

Please specify in your cover letter that the submission is intended for the special section on secondary trauma and burnout and address your letter to Dr. Lisa Kearney, Associate Editor. All papers submitted will be initially screened by the editorial board and then sent out for blind peer review, if evaluated as appropriate for the journal.

For further questions related to this special section, please contact Dr. Kearney at [lisa.kearney3@va.gov](mailto:lisa.kearney3@va.gov)

## **Appendix 3**

### **Web Intervention Design Issues**

This report describes the design issues to consider when designing the SupportNet internet-based intervention. A model from Frank (2003) describes a set of principles to consider when evaluating the design of a computer-based intervention. These factors are usefulness, ease-of-use, efficiency, engagement, and trustworthiness (Frank, 2003).

#### **Design Principles**

##### **Usefulness**

The system must provide “. . . accurate content that is relevant . . .” (Frank, 2003, p. 1) for the users. It should use dynamic and graphical content that provides information that is tailored to the user’s level of symptoms (as measured by the assessment) and knowledge (as assumed by level of professional education). The user should not be demotivated by being presented with information that is not relevant to their particular needs.

##### **Ease-of-Use**

Is information conveyed without requiring a lot of reading?

##### **Efficiency**

Does the site match the mental models of the users? Research suggests that the most efficient sites provide the user with a mental model or landscape that allows the user to more easily process and incorporate new information (Rosen & Purinton, 2004).

##### **Engagement**

Engagement requires that there is a reason and motivation for regularly returning to the site. Rosen and Purinton (2004) describe a Preference Framework from the work of Rosen and Rosen. This framework includes design dimensions that improve the user’s comfort and willingness to

regularly return to a site. These dimensions include coherence, complexity, legibility and mystery (Rosen & Purinton, 2004) explaining

These dimensions allow a rapid assessment of a scene or situation based upon a surface examination. Settings which are orderly (coherent) increase the individual's ability to understand the environment. Environments containing richness of elements (complexity) encourage exploration. Neither complexity nor coherence alone is sufficient to motivate activating one's cognitive map and, hence, feeling confident and comfortable in an environment; both are required. . . Research demonstrates that people favor landscapes which recognize a preference for coherence and legibility (Lynch, 1960), while at the same time accommodating a desire for some complexity (Wohlwill, 1976) and mystery (Kaplan, 1973b) (Rosen & Purinton, 2004, p. 789).

### **Trustworthiness**

Can the site and its information be trusted? Is it sponsored by a reputable organization?

### **Factors Affecting Use**

There appear to be three factors affecting the use and efficacy of internet interventions. They are drop-out rates, adherence to the treatment, and continued engagement with the site.

### **Drop-Out Rates**

Donkin et al. (2011) discuss their findings about the factors that influence drop-out rates of e-Therapy treatments. They suggest that drop-out rates for internet interventions is close to or perhaps lower than drop-out rates for in-person therapy. Factors that contribute to continued use and engagement are 1) use of empathy and social dialogue in the program, 2) regular tracking and reminders for the users, and 3) willingness to invest the time and physical and emotional energy in the program (Donkin et al., 2011).

### **Adherence**

Adherence refers to whether the treatment protocol designed into the site is being completed and followed as designed. Adherence has been measured by site usage statistics including logins and site usage statistics including such things as modules completed, posts on a forum, page views, and the like (Donkin et al., 2011). As noted by Donkin et al. (2011), the most common measurement of adherence for psychological interventions was module completion.

### **Engagement and Continuance**

Engagement refers to whether the site is designed in a way that keeps the user's interest and creates the sense of mystery that encourages the user to seek more information. Continuance relates to whether users repeatedly return to the site (Chen, 2007). What isn't clear is what design factors influence the user's continued engagement in the site and how the site might be designed to increase engagement and continuance.

From Castaneda, Munoz-Leiva, and Luque (2007)

To predict user's intention to revisit a website Castaneda, Munoz-Leiva, and Luque (2007) did a study to understand the factors that contribute to engagement and continuance. This was one of the first studies conducted using an Internet-based application instead of simply acceptance of internal IT systems.

*More specifically, the results are as follows:*

*\_ Perceived usefulness is the main determinant of the intention to continue visiting a website, irrespective of the level of experience of the user, its direct influence being greater in the frequent users of the Internet.*

*\_ In users with high experience of the Internet or a website, the influence of perceived usefulness on the process of forming the attitude to the website is substantially greater than in users with low experience.*

*\_ In users with high experience of the Internet or a website, the influence of perceived ease of use on the attitude towards the website is substantially smaller than in users with low experience. By the same token, in a high experience situation, the attitude is conditioned primarily by usefulness, the direct effect of ease of use being practically non-existent, corroborating the results of the original TAM. (Castaneda, Munoz-Leiva, & Luque, 2007, p. 392)*

“It is worth noting that perceived usefulness was the most important determinant of the intention to visit, regardless of the user’s level of experience.” (Castaneda, Munoz-Leiva, & Luque, 2007, p. 393)

Professional Virtual Communities (Chen, 2007) – factors affecting continuance intentions are “. . . system quality, information quality and satisfaction impact IS users” intentions. . .” (Chen, 2007, p. 452).

Chen (2007) describes the concept of “social capital” as the value that gets created by the participation in a professional network in terms of the resources that network represents. Social capital facilitates knowledge exchange and knowledge exchange keeps the PVC relevant and useful. Without knowledge exchange, the PVC becomes outdated and does not attract (engagement) or retain (continuance) the interest of its participants.

### **Changes in Design**

*“The Web 2.0 technologies that call for a more stakeholder-driven approach are beyond the scope of current frameworks. To overcome these limitations, we composed a holistic framework based on a participatory development approach, persuasive design techniques, and business modeling.” (Van Gemert-Pijnen et al., 2011). “The way in which technology is being designed to improve health care needs rethinking.” (Van Gemert-Pijnen et al., 2011).*

Constructs:

Cognitive absorption (Agarwal & Karahanna) (a trait variable??)

Individual traits (Roche & McConkey, Wild et al)

Cognitive playfulness (Webster & Martocchio)  
Personal Innovativeness in IT (Agarwal & Prasad)  
“Flow” experience (Trevino & Webster)  
Cognitive engagement (Agarwal & Karahanna)  
Perceived usefulness (Davis)  
Perceived ease of use (Davis)  
Computer self-efficacy (Compeau & Higgins)

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Donkin, L., Christensen, H., Naismith, S. L., Neal, B., Hickie, I. B., & Glozier, N. (2011). A Systematic Review of the Impact of Adherence on the Effectiveness of e-Therapies. *Journal of Medical Internet Research, 13*(3), 52.

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## **Appendix 4**

SupportNet Evaluation Literature Review

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## Abstract

Psychologists treating military patients are currently at risk for burnout, secondary traumatic stress, and compassion fatigue. These problems are defined both generally and within the context of treating individuals who have experienced combat trauma. The literature review aims to identify the interventions for burnout and compassion fatigue both within the military and in other related fields. The scarcity of empirical literature on military interventions and the absence of program evaluations within the military demonstrates the present need for empirical research to be conducted in this area. Evaluations of relevant mental health interventions are also discussed to provide a framework for our developing evaluation plan. Measures used to assess the effectiveness of the SupportNet intervention are discussed. Implications for the SupportNet intervention for primary caregivers within the military are discussed in light of the literature and research.

Wounded soldiers have been returning from wars for millennia. While physical injuries have always been treated with the utmost urgency and care, the United States military has only recently come to recognize or treat battle-related psychological problems. It was not until the first Gulf War that post-traumatic stress disorder (PTSD) was recognized as a mental disorder with soldiers. Treatments for PTSD have progressed dramatically in the past twenty years, and several evidence-based treatments are currently endorsed by the U.S. military. To this end, the technology of today offers a unique opportunity to provide treatment for returning soldiers as well as provide support for the caregivers who treat them.

In treating clients with combat trauma, mental health professionals listen to recounts of uniquely horrific traumatic events. The following review first defines these interrelated constructs and how they affect military mental health providers. Interventions that have addressed the problems of burnout, secondary traumatic stress (STS), or compassion fatigue (CF) in caregiving professions are outlined, followed by interventions to date that address these problems within the military. Demonstrating the need for empirical evaluation, there are very few programs evaluated on this topic. Process and outcome evaluations to date are summarized as well as measures used to assess the effectiveness of similar or related interventions.

### **Occupational Obstacles for Caregivers**

**Individuals** working in human service fields come in contact with certain occupational dangers or side effects. Several terms have been used to label the resulting stress and coping difficulties experienced by some mental health professionals, including vicarious traumatization (VT), secondary traumatic stress (STS), compassion fatigue (CF), and burnout (McCann & Pearlman, 1990; Figley, 1995). While many avenues are being explored to help human service workers avoid these occupational hazards, mental health providers face special challenges that are unique to their positions. Evaluations of relevant programs are sparse and even absent in terms of military caregivers.

### **Burnout**

Everyone experiences some level of stress at work; however, some occupations expose employees to stress and possibly dangerous situations more than others. For the individual who may be experiencing an extensive amount of stress at work or who is employed in a higher stress job, burnout may occur. Burnout is a complex idea that has been defined in several different ways throughout the years and has symptoms ranging from mild distress to severe depression (Meldrum, 2010). Others define it as emotional exhaustion accompanied by depersonalization, alienation and lack of personal accomplishment (Le Blanc, Hox, Schaufeli, Taris & Peeters, 2007; Lee, Lim, Yang, & Lee, 2011; Linnerooth, Mrdjenovich, & Moore, 2011). Emotional exhaustion has been defined as feeling overextended and exhausted emotionally and physically, and it seems to correlate with high work demands, general work stressors and feelings of having to “deaden one’s conscience” (Glasberg, Eriksson, & Norberg, 2007, p. 392). Depersonalization refers to beginning to feel negative, callous, detached, or cynical in response to coworkers and clients and their situations (Newell & MacNeil, 2010). Lack of personal accomplishment means

a decline in feelings of competence and productivity while at work (Halbeslebe & Demerouti, 2005). Burnout can cause a great deal of distress in clinicians, it can create conflicts in their personal lives, and it may reduce their capacity to perform their job effectively (Meldrum, 2010; Newell & MacNeil, 2010).

Factors that have been shown to contribute to burnout are high workloads, obscure job requirements or role at work, feelings of loss of control at work, lack of social support and certain personality characteristics (Glasberg, Eriksson, & Norberg, 2007). Social support, setting boundaries, and a feeling of internal locus of control were shown in one study to account for 74% of the variance between clinicians who did and did not experience burnout (Killian, 2008).

Many different human service workers are at high risk of burnout, but clinical military psychologists and other military mental health care providers currently have a very high risk for burnout due to the increasing numbers of soldiers returning from combat who need mental health services. The influx of soldiers requiring treatment along with the ordinarily higher stressors and unique job requirements that these clinicians experience puts them in greater danger of burnout (Linnerooth, Mrdjenovich, & Moore, 2011). While these issues have been acknowledged and addressed in literature, there is a paucity of empirical data concerning burnout, its consequences, or its treatment within the population of military clinicians.

### **Vicarious Traumatization**

In addition to burnout, working with traumatized clients, particularly military personnel, presents additional risks to psychologists. McCann and Pearlman (1990) coined the term “vicarious traumatization” (VT) to describe the changes in cognitive schemas, views of the world, and personal relationships that clinicians may experience as a result of trauma therapy.

Repeated empathic engagement with clients' traumatic experiences may result in disruptions to the therapist's experience of self, others, and the world (Pearlman & MacIain, 1995). Effective trauma treatment typically involves the patient describing the traumatic experiences in detail in order to process and work through them. As a result, in helping trauma survivors, therapists listen to graphic stories of combat experiences, and are confronted with harsh examples of people's cruelty to one another (Pearlman & Saakvitne, 1995). Specifically, a high percentage of combat infantry members returning from Iraq and Afghanistan report handling dead bodies, knowing someone who was killed or injured, killing an enemy combatant, and seeing ill or injured women or children whom they were unable to help (Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004).

### **Secondary Traumatic Stress**

Secondary traumatic stress (STS) describes how those who try to help traumatized individuals may experience significant emotional disruption and may themselves become indirect victims of the trauma (Figley, 1995). As a result, STS is increasingly becoming recognized as an occupational hazard to professionals who interact directly with traumatized individuals (Bride, Robinson, Yegedis & Figley, 2004). While VT and STS are clearly related to one another, they can be distinguished in that VT refers to cognitive changes, while STS refers to the manifestation of PTSD-like symptoms (Voss Horrell, Holohan, Didion, & Vance, 2011). Through secondary exposure, social workers can experience symptoms that closely resemble the symptoms of PTSD caused by direct exposure to traumatic events (Figley, 1999). Similar to PTSD, symptoms of STS include intrusive recollection (e.g., repeatedly thinking about clients experiences or having disturbing dreams related to work with clients), avoidance (e.g., wanting

to avoid working with some clients, avoiding people, places or things that are reminders of work with clients), hyperarousal (e.g., feeling jumpy, feeling easily annoyed, having difficulty sleeping), and feeling emotionally numb (Bride et al., 2004). Secondary traumatic stress disorder (STSD) is nearly identical to PTSD except that the stressor is experienced vicariously.

### **Compassion Fatigue**

Figley (1995) introduced the term compassion fatigue (CF) as a more “user-friendly” term to describe STSD. In addition to the symptoms for STS described above, CF is characterized by reduced capacity or interest in being empathic (Figley, 1995). Because being empathic is considered by most to be crucial component in building a therapeutic alliance, CF likely negatively affects clinicians’ ability to do their job. Compassion fatigue contains both elements of STS and burnout, and accordingly, measures of CF contain submeasures for STS and burnout (Adams, Boscarino, & Figley, 2006). According to Figley (2002), several variables contribute to the development of compassion fatigue, including empathic ability, empathic concern, exposure to the client, empathic response, compassion stress, sense of achievement, disengagement, prolonged exposure, traumatic recollections, and life disruption. The applications of Figley’s model is addressed below.

### **Interventions**

In the following section, we discuss mental health interventions aimed to reduce burnout, STS, and CF among human service workers in general, and specifically within the military. Web-based mental health interventions are described and recommendations are proposed. Finally, mental health interventions within the military are analyzed in detail, both those involving face-to-face communication and online interventions.

## **Burnout Intervention in Medical Fields**

In addition to military mental health care providers, physicians and other professionals working in human services field (e.g. social workers, nurses, and caretakers for the elderly) also experience high rates of burnout. One population that is experiencing burnout is oncology care providers.

To reduce burnout among oncology care providers, Killian (2008) developed a team-based burnout intervention and tested its effectiveness using a pre-test, post-test design (Killian, 2008). The intervention itself included a training manual, counseling sessions to inform about self care and ways to avoid burnout, and social support. The results showed the intervention succeeded in significantly decreasing participant's feelings of depersonalization and emotional exhaustion. This study claims quite a few limitations and suffered from high attrition in the experimental group (Le Blanc, Hox, Schaufeli, Taris, & Peeters, 2007).

## **STS Intervention for Well Baby Nurses**

Another intervention aimed to reduce secondary trauma among Israeli well baby clinic nurses through increasing self-efficacy (Berger and Gelkopf, 2011). In this study, 90 nurses were randomly assigned to a control group (wait-list group) or experimental group (intervention group). The intervention group was asked to attend 12 weekly six-hour group sessions in which they would receive education on self-efficacy practices and would participate in group discussions. None of the nurses who began the program finished all 12 session. The results of the study showed that the participants in the experimental group showed a significantly greater reduction on self-report measures of STS as well as elevated scores on professional self-efficacy.

## **Internet Interventions**

With the increasing utility of technology in our everyday lives, the development of internet interventions has grown rapidly over the past decade. Several programs have been launched to treat a variety of mental health problems, including alcohol addiction, stress management, PTSD, anxiety and depression (Hirai & Clum, 2005; Lange et al., 2001; Litz et al, 2004; Williams, Hagerty, Brasington, Clem & Williams, 2010). Internet interventions hold a great deal of potential for reaching a wider scope of individuals who may not otherwise seek mental health treatment; several barriers to seeking traditional in-person therapy include monetary constraints, scheduling difficulties, lack of available providers within the geographic area (especially in rural areas), and the stigma associated with mental health issues. Empirically supported internet interventions will next be discussed followed by descriptions of military internet interventions that have yet to be evaluated empirically.

**Interventions for PTSD.** Internet interventions for traumatic stress have shown encouraging results (Benight, Ruzek, and Waldrep, 2008). Several online interventions have proven efficacious in reducing symptoms of PTSD in non-military participants (Hirai & Clum, 2005; Lange et al., 2001; Litz et al., 2004).

In a recent meta-analysis of telehealth interventions Sloan, Gallagher, Feinstein, Lee and Pruneau (2011) found that telehealth interventions produced large and significant effect sizes in reducing PTSD symptoms compared to wait-list control groups ( $d = 1.01, p < .001$ ). However, the mean effect size for telehealth treatments showed it to be significantly less effective than face-to-face interventions for trauma treatment. These findings suggest that face-to-face trauma treatment is more effective than telehealth interventions for PTSD; however telehealth interventions produce meaningful reductions in PTSD symptoms, and therefore would be

preferable to no treatment for individuals impeded by barriers to seeking traditional face-to-face psychotherapy. Of the studies included in the meta-analysis that reported pre- and post-treatment measures of PTSD symptoms, the mean within-groups effect size was large and statistically significant; although these results suggest that telehealth interventions result in large reductions in PTSD symptoms, Sloan et al. caution that they calculated a significant  $Q$  statistic which indicates that the effect sizes in the analyses were heterogenous.

One noteworthy randomized control trial (RCT) included in the previous meta-analysis delivered internet-based CBT to military participants with combat-related PTSD (Litz, Engel, Bryant, & Papa, 2007). The study compared an online therapist-assisted self-management CBT intervention to an internet-based supportive counselling control and found that those who received the self-management CBT intervention reported greater reductions in PTSD symptoms and one-third reported high end-state functioning at six-month follow-up (Litz et al., 2007). Based on the promising results internet interventions have shown in treating PTSD, the military launched its own site to address the challenges faced by soldiers returning from deployment.

**Afterdeployment.org.** The DoD launched the website [afterdeployment.org](http://afterdeployment.org) (AD) to accomplish two goals: (1) to provide online tools for early diagnosis and treatment of PTSD for military and civilian health care providers, and (2) to assist military family members in identifying PTSD (Rucek, Hoffman, Cuilla, Prins, Kuhn & Gahm, 2011). AD includes online assessments for 29 post-deployment issues. The site is directed toward military service members, their families, veterans, and providers working with the military community. AD provides comprehensive information on 18 topic areas, including PTSD, mild traumatic brain injury, alcohol and drugs, health and wellness, and resilience. For each topic, AD contains videos, self-

directed workshops with interactive exercises, and links to relevant resources. Users may work at their own pace and access resources privately and conveniently anytime; AD can be accessed 24 hours every day, which increases the timeliness of treatment since individuals do not have to wait for an appointment (Rucek et al., 2011). Given the stigma associated with seeking mental health care, internet interventions may appeal to many service members and veterans who would not otherwise seek help, and AD it provides confidential, non-stigmatizing support

(Rucek et al., 2011).

Although AD was developed as a self-care resource for service members and veterans, the Provider Portal has become one of the most visited areas of the website (Bush, Bosmajian, Fairall, McCann & Cuilla, 2011). Providers can improve upon their knowledge of PTSD, trauma, and military culture as well as access links to continuing education materials, training, and clinical practice guidelines developed by the VA (Rucek et al., 2011). In this way, AD functions as a supplement to more traditional in-person therapy by assisting the providers in treating military service members. According to Bush et al. (2011), AD intends to add self-care resources for health care providers to address the problems of burnout and STS. However, the site does not appear to have incorporated these tools yet. Afterdeployment.org undoubtedly has great potential to help military service members and mental health care providers.

### **Mental Health Provider Interventions**

More recently, the struggles of mental health providers have been recognized both outside and within the context of the military. The Accelerated Recovery Program (ARP) was developed to address CF through a systematic intervention that includes offering therapy to the

therapists experiencing symptoms. The Certified Compassion Specialist Training builds off of ARP and utilizes a “training as treatment” model to train individuals in recognizing and treating CF among their colleagues. These mental health provider interventions are discussed in detail below.

**Accelerated Recovery Program.** Developed by the Traumatology Institute at Florida State University, the Accelerated Recovery Program (ARP) aims to address the issue of compassion fatigue by helping clinicians to regain functioning in their personal and professional lives and to positively reinforce their future in their profession. The ARP helps caregivers to resolve the symptoms and causes of compassion fatigue as well as develop a self-care plan to promote resiliency and provide protection against future compassion fatigue (Gentry, Baranowsky, & Dunning, 2007).

The ARP consists of a standardized treatment over five sessions. The goals of treatment, called the four pathways to recovery, include skills acquisition, self-care, internal conflict resolution, and connection with others (Gentry et al., 2007). Caregivers are asked to tell their story, and an inventory is taken of the experiences which have cumulated to produce CF. Additionally, caregivers are asked to recall specific situations which function as triggers of their CF. Also, the caregiver is encouraged reconnect with the hope and empowerment felt earlier in their career. Relaxation skills are taught as well, including a progressive relaxation exercise and a safe-place visualization (Gentry & Schmidt, 1996).

In the third session, the caregivers discuss their professional goals, personal goals, primary and secondary trauma, silencing response, and trajectory of hope. Vicarious trauma situations that trigger CF for the caregiver are reviewed and the caregiver reviews self-regulation

strategies for handling such situations (Gentry et al., 2007). Eye Movement Desensitization Reprocessing therapy (EMDR) may be used as well. The caregiver and therapist develop a self-care plan. They are asked to identify areas where they need professional skill development and contract to take the necessary steps to acquire these skills. The therapist reads a letter form “The Great Supervisor” which includes things that the professional most needs and wants to hear from his or her supervisor; later the caregiver is asked to read this letter aloud on videotape.

Although promoted at a conference in Quebec, the Accelerated Recovery Program does not yet have empirical published results evaluating its efficacy. It draws upon several already known treatments, including time-limited trauma therapy, thought field therapy, eye-movement desensitization reprocessing (EMDR), video-dialogue, visual/Kinesthetic dissociation, and hypnotherapy (Gentry et al., 2007).

The accelerated recovery program was initially tested among a small sample of caregivers ( $n = 10$ ) who provided assistance to survivors of the 1995 Murrah Building bombing in Oklahoma City; the sample included chaplains, psychologists, and emergency services personnel. Gentry and Baranowsky (2002) found that the ARP resulted in significant reductions in scores on the compassion fatigue and burnout subscales of the Compassion Satisfaction/Fatigue Self-Test (Figley, 1995) from pretest to posttest, and compassion satisfaction subscale scores increased. In order to determine the merit of ARP, empirical research must determine its effectiveness. Furthermore, ARP consists of a myriad of different treatments, and it could be improved by disseminating the most important elements and devoting more energy to those significant parts.

**Certified Compassion Fatigue Specialist Training (CCFST).** In response to the accelerated recovery program, the CCFST was developed in order to provide comprehensive training to professionals to help other caregivers suffering from compassion fatigue (Gentry, Baggerly, Baranowsky, 2004). This comprehensive training program seeks to teach professionals how to implement the ARP and has the added benefit of “training-as-treatment” effect, whereby the education and training help caregivers to recognize and prevent CF in themselves (Gentry et al., 2004). The participants received training over the course of two days, were given pre- and post-tests of the compassion satisfaction/fatigue self-test (CSFST; Figley, 1995), and demonstrated reductions in CF and burnout as well as increases in compassion satisfaction (Gentry et al., 2004). This concept of “training-as-treatment” may have merit as a way to train participants both to treat others with compassion fatigue as well as provide treatment to those participants who are suffering with CF themselves. In this way, the CCFST may have the added benefit reaching professionals who may otherwise not seek help themselves. Because this study was not published and has yet to be replicated, additional research is necessary to determine if CCFST can be deemed an effective treatment in itself and if it provides the added benefit of treating the professionals who participate. However, the CCFST program is noteworthy in that it endorses and teaches clinicians how to implement the ARP; additionally, the CCFST program provides education and skills to clinicians to improve awareness, prevention, and treatments for CF.

### **Military Health Provider Interventions**

The Army initiated its Provider Resiliency Training (PRT) program to combat burnout and compassion fatigue among health care providers in the military. Additionally, one Army

hospital developed its “Care for the Caregivers” program which provides a respite room for its staff. These interventions are outlined below.

**Care for the Caregivers.** Brooke Army Medical Center at Fort Sam Houston, Texas has launched their “Care for the Caregivers” program in an effort to address the related problems of secondary traumatic stress and burnout. The program combines prevention training and treatment, including seminars and stress-management techniques (Wilson, 2008). Furthermore, the facility has built a relaxation room at the hospital to demonstrate their appreciation and caring for the caregivers at Brooke hospital. This respite room provides a place caregivers can temporarily escape the stresses of work. It is furnished with comfortable chairs, soothing music played through high quality sound-system, and dim lighting to promote relaxation (Wilson). While the respite room and training may provide some benefit to the employees at Brooke Hospital, there has yet to be any assessment of how the program is going or empirical data measuring the program’s effectiveness.

**Army Provider Resiliency Training.** Launched in July, 2008, the Army Provider Resiliency Training (PRT) initiative intends to address the issues of CF and burnout among Army Medical Department mental health providers (Boone, Camarillo, Landry & DeLucia, 2008). The Army PRT program consists of three phases. In the first phase, providers are given the Professional Quality of Life Inventory (ProQoL) and given immediate feedback on his or her current levels of compassion satisfaction, compassion fatigue, and burnout. Also in the first phase, providers watch a “brief, but extremely important, PRT video which sets the stage for one’s ongoing self-care response to the inevitable challenges to well-being brought on by difficult work” (Boone et al., p. 59).

Phase two involves education about the signs of compassion fatigue (which is called “provider fatigue”) as well as strategies to enhance compassion satisfaction (called “provider resiliency”). These terms were determined to be more in tune with military terminology. Also in phase two, the health care provider discusses the meaning of the ProQOL results and outlines their personal self-care plan.

The last phase involves a ProQOL reassessment and making any adjustments to the self-care plan. Throughout the program, PRT trainers should be easily accessible and available to address providers’ questions or concerns related to provider fatigue, burnout, or the self-care plan (Boone et al., 2008). Recognition of military healthcare providers’ need for such services to address the problems of compassion fatigue, burnout, and overall quality of life is a significant first step. However, to date, there does not seem to be any ongoing assessment or evaluation of the program and its effectiveness. In order to improve and build upon the Army PRT program, empirical research and formal evaluation techniques are needed. To ensure the Provider Resiliency Training provides the help it intends, ongoing formal evaluation will be necessary to recalibrate its efforts and improve upon the program’s effectiveness.

### **Program Evaluation**

Program evaluators are an essential component to any project team. Their assistance can assure that the milestones of a program and its ultimate goals are being met. Program evaluations ensure that the concerns and wishes of the interested and affected parties (i.e., stakeholders) are addressed using the best possible application processes and methodology (Morris, 2010). This is done through careful evaluation of the literature that pertains to the program or project, and then correctly applying this to the program that is being evaluated in

terms of the assessment of needs, the processes used to address these needs, the outcome of the application of these processes, the impact and outcome for the stakeholders, and in determining the fiscal requirements and plausibility of supporting the program financially. These responsibilities must be carried out with the utmost ethical standards in order to ensure the proper treatment of stakeholders and to offer meaningful contributions to the project (Taut & Brauns, 2003; Stake & Mabry, 1998; Morris, 2010).

### **Need for Program Evaluation**

Program evaluators may not always be viewed as important and could also sometimes be feared. It is easy to understand that people may become so focused on their program and their goals that they never actually stop to see if they are accomplishing what they set out to accomplish. It has been documented that program staff are usually the ones who put forth the most resistance to evaluators starting with those who have the most commitment to the project. This resistance is said to be due to the reactance of the program staff and power struggles when trying to take into account the needs of all stakeholders (Taut & Brauns, 2003).

Program evaluations can be a great tool for anyone wishing to start a new program or determine the effectiveness of an existing program; they are the check and balance system. Assuring that everyone that has a stake in the project is accounted for and addressed and that all objectives are being met with the best possible instruments and methods used. Evaluators have no vested interest in the project and therefore may be able to be more objective. Evaluators should be viewed as less of a threat and rather as essential piece to any program development team.

### **Stakeholders**

Stakeholder participation in the process of implementing a new program or in intervention method is a critical aspect and should be considered by any evaluator or program team (Morris, 2010; Taut & Brauns, 2003; Van Vorhees et. al., 2007). As with any team effort or project, conflicting ideas and hopeful outcomes may arise. Resistance may also be encountered throughout the evaluation process (Greene, 1988; Taut & Brauns, 2003), this is sometimes due to previous negative experiences in utilizing program evaluations and several different human aspects (e.g. conflicting power relations, conflicts of interest, and competition). Resistance may result in lack of utilization of the evaluation and its suggestions (Greene, 1988; Taut & Brauns, 2003). Greene (1988), maintains that stakeholder participation and utilization is one of the most important considerations for program developers and evaluators in order to maintain helpful evaluation practices and to ensure long term success of the project (Greene, 1988). Resistance can and should be overcome in the interest of the project outcome and in order to maintain sound practice. To ensure these two ideas, it is important to identify and entertain all stakeholder interests (Greene, 1988, Taut & Brauns, 2003). This practice allows for more powerful program outcomes.

### **Needs Assessment**

### **Process evaluation**

Process evaluation aims to determine the extent to which the intervention is being delivered and implemented according to plan. During the development and implementation stages of the program, process evaluators use systematic measurement to assess how well the program is meeting its specified goals, the extent to which the program is reaching the intended

target group, and how satisfied participants are with the program. Steckler and Linnan (2002) specified seven components to be measured and evaluated in process evaluations of public health interventions, including context, reach, recruitment, dose delivered, dose received, fidelity to treatment, and implementation. Context refers to aspects of the larger social, political, and economic environment that may influence implementation of the intervention (Steckler & Linnan, 2002). Reach refers to the proportion of the target population that participates in the intervention. Relatedly, recruitment refers to procedures used to attract participants, and it can occur at the individual and organizational level. Dose delivered means the amount of intended units of the intervention provided to participants, whereas the dose received refers to the amount of units of the intervention participants were actually exposed to. Said differently, the dose received represents the extent to which participants actively engage in the intervention and interact with the delivered intervention components. Fidelity means the extent to which the intervention was delivered as intended, and represents a measure of quality and integrity of the intervention as planned by its developers (Steckler & Linnan, 2002). Finally, the implementation of the intervention reflects the extent to which the intervention has been applied and received by the target population.

Using the framework developed by Steckler and Linnan (2002), a review of process evaluations for workplace stress management interventions found that most commonly described components of program evaluation are recruitment, reach, dose received, and participants' attitudes toward the interventions (Murta, Sanderseon, & Oldenburg, 2007). Based on their findings, Murta et al., (2007) recommend obtaining support and involvement from managers and supervisors, for this factor was found to be related to better implementation of the stress

management intervention and increased likelihood of achieving the outcomes of interest. Additionally, Murta et al., suggest delivering a larger “dose” of the intervention at a time, promoting a warm and safe climate for those participating in the intervention, and frequently monitoring participants’ attitudes toward the intervention and its effects. Van Voorhees et al. (2007) used similar process evaluation methodology in the development of an intervention program that utilized both primary care and internet components to prevent and treat depression in young adults.

South, Darby, and Bagnall (2010) used quantitative and qualitative research methods in their process evaluation of a community-based self-care training program. Qualitative methods, such as interviews and focus groups, can supplement quantitative outcome measures and lead to deeper understanding of the processes and contextual factors influencing outcomes. In assessing whether implementation is successful, reach and access are key components to consider, as well as the acceptability and appropriateness of the intervention with different stakeholder groups (South et al., 2010).

### **Outcome evaluation**

Outcome evaluation involves use of statistical methods to determine treatment effectiveness on the target group. Quantitative outcome measures taken at different times before and after the intervention allows researchers to assess the extent to which the stakeholders change over time, presumably as a result of the intervention. In outcome evaluation, it is important to consider the design of the study, including design features such as including a control group for comparison, random assignment, pre and post-tests, and adequate sample size. Attrition is a common problem with online interventions, so it is crucial to anticipate attrition

when determining sample size and to maintain frequent contact with participants to keep them engaged (Chiu & Eysenback, 2010).

Outcome measures assess whether target goals have been achieved. Measures of STS, CF, and burnout for the SupportNet intervention are discussed in the section on measurement.

### **Impact evaluation**

Impact evaluation examines both the intended and unintentional changes that can be attributed to the program or intervention. In addition to assessing the extent to which the intervention is responsible for the observed changes in the target group, impact evaluations also examine secondary and tertiary groups who are affected indirectly by the intervention. For example, secondary stakeholders affected by the SupportNet intervention would include the clients of the primary caregivers who participate. Also, the friends, family, and coworkers of the participants warrant consideration as well.

### **Qualitative Methods**

Although the majority of empirical published research in psychological science currently is based on quantitative research methods and statistical analyses, there is a growing appreciation for the contributions of qualitative research methods (citation here). Whereas quantitative research aims to describe a target population of interest, qualitative research focuses on accurately portraying detailed descriptions of selected individuals' experiences. Participants are selected purposefully, and qualitative data can be gathered through interviews and observations, among other methods (Polkinghorne, 2005). Although in-depth individual accounts may not be generalizable to a larger group of people, qualitative research yields in-depth information and produces a clear picture of a particular person's experience. Combining quantitative and

qualitative methods can create an informed, well-rounded analysis; detailed accounts from key informants can provide insight that drive broader quantified hypotheses about the population of interest. Furthermore, detailed anecdotal evidence from interviews with participants can further support (or contradict) the results found by traditional quantitative research methods.

In the process evaluation of the SupportNet project, semi-structured interviews and open-ended questions may be utilized. The semi-structured interviews will contain a protocol of open-ended questions to enable comparison across cases, yet interviewers will maintain a degree of flexibility to probe further particular areas that emerge in participants' stories to obtain more in-depth data (Hill, Knox, Thompson, Williams, Hess & Ladany, 2005). Interviews will be conducted face-to-face when possible but phone interviews may also be utilized. Face-to-face interviews have the advantage of providing rich nonverbal information in addition to verbal responses to questions; however, some interviewees may feel more comfortable or agreeable to talking over the phone (Knox & Burkhard, 2009).

### **Evaluation of Interventions for Caregivers**

There are few empirical studies that evaluate interventions related to burnout, compassion fatigue and secondary traumatic stress for all job types, and none have been found to date that evaluate these types of programs within the military. The intervention programs described previously have limited empirical support and evaluations of these programs seem to be nonexistent.

There is a striking lack of evaluation of military mental health interventions, and virtually no evaluations of interventions aimed at reducing caregiver CF and burnout. One evaluation has focused on meditation and mindfulness practices as a means of support for military care

providers (Duerr, 2008). Another intervention aimed to treat military personnel struggling with alcoholism (Pemberton et. al, 2011). The lack of evaluations in military care settings requires urgent attention. Evaluation can accelerate the development and improvement of programs in order to provide service members and their caregivers with the support they deserve, which is empirically-based support that has proven successful outcomes.

**Meditation and Mindfulness Practices.** Integrating results from 45 selected articles, mindfulness and meditation practices by care providers has empirically shown significant benefits in four main areas: reduction in anxiety and depression, reduction in other burnout symptoms, increases in compassion and self-compassion, and impact on professional skills (Duerr, 2008). The evaluation of the studies that resulted in diminished burnout symptoms and higher levels of compassion for others, self-compassion, and empathy may be of particular relevance to development of the SupportNet program. While Duerr (2008) provides a strong case for the benefits of mindfulness and meditation practices in general, it is critical to note that the studies included in her research did not focus on psychologists treating military clients.

The evaluation notes five elements that contribute to the prevention and treatment of burnout and compassion fatigue, including compassion and self-compassion, resilience, self-awareness, meta-cognition and attention, and meaning (Duerr, 2008). Self-awareness includes self-care. These elements also coincide with the theory of improving one's coping self-efficacy. In considering how to implement mindfulness and meditation based practices as an intervention to military caregivers, Duerr concludes that a support system is of the utmost importance in helping military providers and functions to optimize the positive effects of any intervention.

### **Program Evaluation of Internet Interventions**

A recent meta-analysis compared internet interventions that promote health behavior change across three characteristics: theoretical basis for intervention, behavior change techniques used, and mode of delivery (Webb, Joseph, & Yardley, 2010). The meta-analysis demonstrated that the more extensive use of theory was associated with significantly larger effect sizes compared to those that made less extensive or no use of theory. Specifically, interventions that used theory or predictors to select recipients for the intervention tended to have the largest effects on behavior compared with most other uses of theory (Webb et al.). Among the health behavior interventions included in the analysis, the most commonly used behavior change techniques included providing information on the consequences of behavior in general, prompting self-monitoring of behavior and identifying barriers and/or problem-solving. Although used in fewer interventions included in this analysis, stress management or general communication skills training had the largest effect sizes of  $d = .50$  and  $d = .49$ , respectively (Webb et al., 2010). Additional behavior techniques also demonstrated significant effect sizes that exceeded  $d = .20$ , including modeling, relapse preventing/coping planning, facilitating social comparison, goal setting, action planning, and providing feedback on performance (Webb et al.). Regarding the mode of delivery for the interventions, Webb and colleagues found that internet-based interventions that also utilized text messages had especially large effects on behavior ( $d = .81$ ); also, interventions that also used the telephone as an additional mode of delivery had small-to-medium effects ( $d = .35$ ; Webb et al.).

Although internet interventions continue to increase, the guidelines for research and evaluating effectiveness of such interventions have lagged behind (Proudfoot et al., 2011). This rapidly expanding sphere of influence necessitates guidelines for evidence-based research and

evaluation methods in order to advance as a science. To address this need, Proudfoot and colleagues developed a set of guidelines for the process and reporting of internet interventions research; these guidelines were formulated by iterative discussion resulting in consensus by the professional authors of the article with the intention of to serve as a basis for regulations to follow. Guidelines specific to program evaluation within this domain involve the areas of efficacy, efficiency, and effectiveness. Additional facets relevant to the evaluation of the SupportNet intervention will also be discussed including target population, model of change, type and dose of intervention, program interactivity, multimedia channel of delivery, and degree of synchronicity.

**Efficacy.** In terms of efficacy of the intervention, it is necessary to include the psychometric properties of the measures utilized, outline the data collection procedures and the schedule of measurements implemented, describe the type of data analyses conducted, and report the study's findings and conclusions drawn. Regarding the participants in the sample, the characteristics of the sample need to be provided, comparison groups defined, and details of sample attrition at each measurement time and details of participants' adherence or non-adherence should be provided when relevant (Proudfoot et al., 2011). Process measures, such as usage, traffic, and attrition provide key information for analyzing user behavior, delivery mechanisms, systematic attrition, and outcomes (Christensen, Griffiths, & Farrer, 2009).

**Effectiveness.** In assessing effectiveness, researchers should report routine outcome measurements, participants' adherence to the intervention, and information about the generalizability of intervention's effectiveness in a real world context (Proudfoot et al., 2011). Indices of an intervention's effectiveness include improvements in users' symptoms, behavior,

functioning and quality of life (Proudfoot). The SupportNet project will measure burnout, STS, CF, CS, perceived social support, and quality of life using some of the measures discussed later in this review. In addition to these quantitative measures of effectiveness, qualitative methods may be necessary to enrich the information provided by the quantitative analyses. Proudfoot et al. urge researchers to recognize additional complexities including participant preferences, selection biases, differential dropout rates, and the appropriate use of quantitative and qualitative methods.

**Efficiency.** One reason internet interventions have grown so rapidly is their relatively low cost to develop and disseminate. In considering the cost-to-benefit ratio, internet interventions have the potential to benefit a large sample of individuals at a relatively low cost. Having professional support who respond to participant inquiries or provide live chat support would add to the cost of an intervention, but it increases the synchronicity and interactivity components discussed below.

**Target population.** The target population should be defined in terms of demographic factors, symptoms or problem area, psychological indices (e.g. self-efficacy, motivation, and locus of control), and technological considerations (e.g. computer ability) (Proudfoot et al., 2011). For the SupportNet project, key demographic factors would include age, gender, education level, years experience in the field, trauma training, and personal experience with trauma. The symptoms or problem area include burnout, STS and CF as defined previously.

Another related facet is the audience reach, which refers to the accessibility of the intervention; the way by which participants access the intervention must be clearly defined as well as eligibility and exclusion criteria (Proudfoot et al., 2011). An additional consideration for

internet interventions is readiness for mass dissemination, including information about the capacity for the program to be released on a larger scale and reach a wider audience (Proudfoot et al., 2011).

**Model of change.** The specific process variables for therapeutic change will depend on the theoretical basis for a given intervention. The SupportNet intervention intends to utilize social cognitive theory as a framework for providing benefits to primary caregivers within the military. As outlined in its proposal, the SupportNet project aims to promote therapist empowerment and resilience by improving environmental support, self-efficacy in coping, and specific coping skills (SupportNet proposal).

**Type and dose of intervention.** Proudfoot et al. (2011) recommend that the type and frequency of the intervention be clearly stated (the prescribed and actual frequency of use of the site and the modules within it), whether users can track their progress and receive feedback, and whether the intervention is adjusted to meet individual needs. In addition, it should be made clear whether the measures used in the intervention have been validated for online administration.

**Program interactivity.** Interactivity in an online intervention includes providing feedback and tailoring content to individual users, active participation as opposed to passive user behavior, increased user control and involvement in decision making, and real-time responsiveness (synchronicity); theoretically, higher levels of interactivity should improve learning, motivation and adherence which enhances the impact of the intervention (Walther, Pingree, Hawkins, & Buller, 2005). Some examples of interactive elements include interactive

exercises, self-monitoring data, tailored feedback, discussion groups or chat rooms, questions and answers, action planning, and questionnaires or quizzes (Proudfoot et al., 2011).

**Delivery modality.** Various multimedia channels may be utilized in delivery of internet interventions to enhance user engagement, and the channels of delivery chosen should correspond to the target users' characteristics, computer literacy, motivation and learning style, as well as treatment readiness (Proudfoot et al., 2011). Several channels of delivery include audio, video, email correspondence and support, live chat, texts, mobile phone applications, 3-D virtual reality environments, and chat rooms or discussion groups.

**Synchronicity.** The degree of synchronicity refers to the timing and responsiveness in communication, feedback and support from professional clinicians, other users, or from the program itself (Proudfoot et al., 2011). Synchronous communication is immediate, such as real-time chat via Skype or some similar programs. Asynchronous communication is delayed, such as email responses and blogs or forums. In planning an internet intervention, it is important to clearly report the synchronicity of support and feedback to the users and analysis.

**Adherence.** Dropout is of particular concern for web-based intervention research, for attrition can undermine the statistical power of the the results and the generalizability of the study. Adherence measures the extent to which participants follow the intervention as intended. Ways to increase adherence and reduce attrition include sending reminders to participants and improving upon the interactivity of the program (discussed previously). In a study of a self-guided CBT e-therapy for depression, Christensen, Griffiths, Korten, Brittliffe, & Groves (2004) found that weekly tracking and reminders reduced attrition. Quantitative measures of adherence include number of logins, completed modules or activities, visits and posts to forums,

and self-reported completion of activities in daily life away from the program (Donkin, et al., 2011). In their review of e-therapies, Donkin et al., concluded that module completion was most consistently related to outcomes in psychological health interventions, and number of logins was most related to outcomes in physical health interventions. Tracking participant usage of the site is a crucial component in the development and ongoing process evaluation of web-based interventions.

**Process Evaluations of Internet Interventions.** In a recent process evaluation of a web-based intervention designed to empower disability benefit claimants, the reach and compliance were measured in the following ways. Reach was determined by registering the number of invitations sent and the number and characteristics of non-participants and reasons for not participating (if provided). Additionally, nationwide representative data were collected as indicators of population to determine the representativeness of the sample. Compliance was defined as the extent to which the intervention was used, and user authentication was used to register activity for each participant (Samoocha, et al., 2011). Weblogs included the participant's ID number, page visited, time stamp for start and end times, and the session number (Samoocha, et al., 2011). The weblog data were used to calculate each participant's total time the intervention was used, number of unique page views, total number of sessions, number of clicks, time spent on each module, and the most used components of the intervention (using number of unique visitors and total time on page), and the amount of posts and post views (Samoocha, et al., 2011). Additionally, an online questionnaire was sent to participant's six weeks after the disability assessment and asked about usage barriers, perceived effectiveness, program appreciation, and suggestions for improvement (Samoocha et al., 2011).

In the development and pilot evaluation of MOMNET, a cognitive-behavioral intervention for maternal depression, researchers utilized by both objective computer-generated indicants and self-reports by participants and coaches to measure engagement, satisfaction, and ease of use (Sheeber et al., 2012). An online infrastructure provided coaches and supervisors with tools for monitoring client participation and clinical progress (program utilization, homework completion, mood/activity ratings, content mastery, and biweekly depression ratings) and tailoring the content of coach calls based on the information provided (Sheeber et al., 2012). Immediate feedback was provided by the computer program and by the coaches; another structural feature was use of varied multimedia materials and interactive elements to maintain participant interest. Knowledge acquisition was examined at the completion of each session with the goal being to obtain mastery (> 80% correct responses) before user proceeded to the next module. The program identified incorrect responses, reviewed related content and retested the material as needed.

### **Program Evaluation within the Military**

There is a paucity of empirical research related to military mental health interventions, and none of the military interventions previously discussed have been formally evaluated. In order to effectively prevent and treat mental health problems within the military, empirical research and evaluation is currently needed. Two internet interventions aimed at reducing alcohol problems within the military are discussed as well as a CBT self-help site to enhance self-care and adaptive coping. More recently, an internet intervention aimed at promoting resilience among soldiers has been implemented and evaluated.

**Comprehensive Soldier Fitness Program.** In effort to promote resilience and psychological health among soldiers, the U.S. Army initiated the Comprehensive Soldier Fitness Program (CSF; Cornum, Matthews & Seligman, 2011). In the context of psychological health, resilience refers to the ability to effectively cope during and after stressful or potentially traumatizing events. The theory behind the program is that developing resilience is a process that can be learned (Lester, Harms, Herian Krasikova, & Beal, 2011). Through skills training, the CSF program seeks to enhance resilience in five health areas: physical, emotional, social, family, and spiritual (Lester, et al. 2011). The program aims to increase physical performance and psychological strength as well as “reduce the incidence of maladaptive responses” (Cornum, Matthews & Seligman, 2011, p.4). The program’s primary mechanism of change is through teaching meta-cognitive skills (Lester et al., 2011). This proactive approach to strengthening soldiers’ resilience fits the military culture better than seeking out traditional mental health treatment, which is still often viewed as a sign of weakness. In fact, the program distinguishes itself from the Army Medical Department intentionally to avoid the stigma associated with behavioral health care (Lester et al., 2011).

Resilience training is now mandatory component of every Army leader development school. This CSF program includes an online assessment of soldier’s Resilience/Psychological Health (R/PH), individualized learning modules, formal resilience training, and the training of Army master resilience trainers (MRTs). The Master Resilience Training program is an integral component of the CSF program. Within each unit, a Master Resilience Trainer (MRT) receives formal training and then teaches these skills to their peers and subordinates. Training teaches the MRTs self-awareness, self-regulation, optimism, mental agility, strengths of character, and

connection (Lester et al., 2011). The training is “designed to develop Soldiers’ ability to understand the thoughts, emotions, and behaviors of themselves and others, help soldiers identify their strengths and the strengths in others by responding constructively to positive experiences, praising others, and by discussing problems effectively” (Lester et al., 2011, p. 9).

Lester and colleagues (2011) evaluated the effectiveness of the MRT program by comparing soldiers who participated in the program with those who were not exposed to training on their levels of R/PH. Using the CSF program’s online self-report measure of R/PH, the GAT, as an outcome measure, the evaluators measured the participating soldiers’ R/PH scores before and after participation (15 months from Time 1). Using a control group, the evaluators concluded that the MRT program improved soldiers’ R/PH scores in a systematic way; there were no significant differences on Family or Spiritual Fitness, but soldiers exposed to the MRT program had significantly higher scores on Emotional and Social Fitness (Lester et al., 2011).

Additionally, the researchers found that those in the treatment condition improved on Emotional Fitness, good coping, and friendship while the control condition did not demonstrate significant change over time. The presence of MRTs embedded within units resulted in increases in Soldiers’ R/PH scores (Lester et al., 2011).

**Web-Based Military Alcohol Abuse Intervention.** Two web-based interventions aimed at curbing alcohol abuse and dependency (i.e. Alcohol Savvy and Drinkers Check-Up) were evaluated by Pemberton, et al. (2011) and found to be effective in attaining their program outcome goals of reducing alcohol intake. Both of these programs were originally designed to help civilians struggling with alcohol problems, but they were later adopted by the military. The

Program for Alcohol Training, Research, and Online Learning (PATROL) was created in order to evaluate web-based interventions in the military (Pemberton, et al., p. 481).

To evaluate these programs the PATROL team recruited participants from almost all branches of the military (e.g. Army, Navy, Air Force, Marine Corps) through recruitment tables, fliers, posters and in some cases, television advertisements and ended up with 4,281 total service members registering for the study, 3,889 of which completed the baseline measure, 1,369 of those service members came to the one month follow up, down to only 913 at the six month follow up (Pemberton et al., p. 481). The evaluators attribute this high attrition rate to frequent deployments possible view of lack of incentive to participate in follow ups.

Even give their large sample and attempt to include all military branches, their response rate for the Army (5%) and Marines (16%) was much smaller than that of the Air Force (36%) and Navy (44%) (Pemberton et al., p. 481). This is problematic in terms of much of the active duty personnel being excluded which may result in inaccurate results. Alcohol Savvy is an alcohol “misuse prevention program” that is narrated and contains audio, video and interactive components and is meant to educate and assess alcohol misuse (Pemberton et al., p. 482).

Drinkers Check-Up is a motivational intervention operating on a person centered philosophy that is meant to educate the user about their negative drinking habits and empower them to make changes. Random assignment of participants to groups (Drinkers Check-Up, Alcohol Savvy, and delayed treatment group) was done when possible; this was not possible at all installations. The outcomes of the treatments were measured at baseline, one month, and six months by using multiple measures.

To analyze the efficacy of the two interventions, the evaluators employed a “piecewise longitudinal growth model” in order to analyze two separate representations of change (Pemberton et al., p. 483). One being the change between the baseline and one month follow up, the other examined the change between the one month and six month follow up. A significant decrease ( $p = .053$ ) was seen in the problem drinking behavior of those who participated in the Drinkers Check-Up compared to the control group, and the Alcohol Savvy ( $p = .057$ ) intervention results neared but did not reach significance. While this evaluation is one of the first to evaluate a web based intervention designed for military populations it comes with several previously discussed limitations that may have biased the results. More research is needed to assess the efficacy and long-term impact of such programs.

**Stress Gym.** In an attempt to assist Naval recruits deal with stress and ward off mental issues attributed to maladaptive coping, a cognitive-behavioral therapy (CBT) self-help intervention called Stress Gym was tested, implemented and reviewed (Williams et. al., 2010). The intervention Stress Gym was developed after an earlier CBT group therapy intervention (Williams et al., 2010). The authors of the article wished to evaluate Stress Gym only to determine whether or not, it and/or internet interventions in general, would be accepted and deployable among military populations.

The items assessed about the intervention included the participants ideas about , “user interface, site usability, feasibility of using such a site, and their general satisfaction with the site” (Williams et al., pg.489). They were also allowed to include what they liked about the site at the end of these general ratings. The outcome of the evaluation determined that the web-based intervention was seen as useful and was feasibly in executing. While this is just a qualitative

evaluation, there is still much that can be gained from the results. As with many other recent studies, these web-based treatments seem to have promising results (Sloan et al., 2011; Williams et al., 2010; Amstadter, Bromsn-Fulks, Zinzow, Ruggiero & Cercone, 2008; Van Vorhees et. al., 2007), however, there are still few evaluations of such programs, especially among military populations.

### **Program Evaluation for the SupportNet Project**

When applying these ideas to the SupportNet project evaluation, it is crucial that the identifiable stakeholders include the project team, clinicians, other employees that work with the clinicians, military chain of command, soldiers employing the clinicians services, and their families. After conducting a thorough needs assessment that is all inclusive of the population that will be utilizing SupportNet (e.g. Military Clinical psychologist, Counselors, Caregiver), a focus group should be conducted to identify all concerns and hopeful outcomes of previously stated stakeholders. This is the best way to ensure that all issues will be addressed in the projected outcome.

#### **Stakeholders**

#### **Needs Assessment**

Recent military operations in Iraq and Afghanistan have created a growing population of returning soldiers with mental health needs. Post-traumatic stress disorder (PTSD), depression, and substance abuse are among the common problems faced by returning soldiers. In an analysis of over 100,000 Operation Iraqi Freedom and Operation Enduring Freedom (OIF/OEF) veterans recently enrolled in Veteran's Association (VA) healthcare, approximately 25% received at least one mental disorder diagnosis; of these 25,000 veterans, 52% were diagnosed with PTSD,

making it the most common health diagnosis in this population (Seal, Bertenthal, Miner, Sen & Marmar, 2007).

## **Process Evaluation**

## **Outcome Measures**

The following measures have been proposed for use in the initial needs assessment, process evaluation, and outcome evaluation for the SupportNet project. In the initial needs assessment, these measures will be used to determine baseline rates of the presence of burnout, STS, and CF in military caregivers. Then, the same measures will be used to determine if the intervention leads to decreases in burnout, STS, and CF as hypothesized.

**Oldenburg Burnout Inventory (OLBI).** Besides the MBI the Oldenburg Burnout Inventory (OLBI) also tests for burnout. Some claim this to be a better measure of burnout due to the shortcomings of the MBI. The OLBI is similar to the MBI but the two differ in several ways, first, the OLBI only consists of two scales as opposed to the MBI's three, the two scales of the OLBI are exhaustion and disengagement. The questions are said to be balanced by positive and negatively worded questions. Exhaustion is represented on the OLBI in both the physical and mental meanings. Some questions remain however on whether or not the OLBI in its translations is still as strong of a measure (Halbesleben & Demerouti, 2005).

**Maslach Burnout Inventory (MBI).** The tool most often used to assess burnout is the Maslach Burnout Inventory (MBI). The MBI consists of three different factors that are meant to measure burnout; emotional exhaustion, depersonalization and personal accomplishment. In an evaluation of the MBI using hospital staff ( $n = 445$ ), researchers found that the MBI did test mostly for emotional exhaustion, followed by depersonalization and weakly identified personal

satisfaction (Kalliath, T. J., O'Driscoll, M. P., Gillespie, D. F., & Bluedorn, A. C. (2000). The MBI has been criticized by some for being poorly worded and relying on underdeveloped concepts.

**Professional Quality of Life Scale (ProQOL).** The ProQOL measures two subscales of compassion fatigue: burnout and secondary traumatic stress. In addition, the ProQOL measures a third subscale, compassion satisfaction (CS), which refers to the positive effects that caregivers experience from trauma work (Stamm, 2010). Feeling rewarded and fulfilled by one's profession and feeling good about helping others contribute to CS measure (Stamm).

Based on their research surveying 1,121 mental health providers, Sprang, Clark and Whitt-Woosely (2007) found that participants who had previously received specialized trauma training scored significantly lower on compassion fatigue and higher on compassion satisfaction as measured by the ProQOL. The results suggest that knowledge and training may help to shield against some of the negative effects of trauma therapy (Sprang et al., 2007). Taken one step further, Sprang et al., theorize that specialized training enhances clinician self-efficacy by improving their skills in assessment and treatment of trauma patients and therefore leading to improved outcomes. Consequently, specialized trauma training is recommended to reduce levels of CF and burnout and to enhance CS (Sprang, et al.).

The ProQOL given at multiple points in time will function to measure the extent to which the SupportNet program succeeds in its goals of reducing STS and burnout as well as enhancing CS.

**Secondary Traumatic Stress Scale (STSS).** The STSS is a self-report measure consisting of 17 statements related to STS symptoms, and responses indicate the frequency

experiencing each symptom on a Likert-type scale ranging from 1 (never) to 5 (very often) (Bride et al., 2004). The STSS is designed to measure current, rather than cumulative, exposure to traumatized clients, since the responses indicate frequency of experiencing each symptom within the past seven days. There are three subscales to categorize the three types of symptoms, intrusion, avoidance and arousal. The STSS is a useful tool in evaluating strategies designed to reduce STS (Bride et al., 2004).

**Compassion Fatigue-Short Scale.** The Compassion Fatigue- Short Scale (CF-Short Scale; Adams, et al., 2006) shortens and improves upon the Compassion Fatigue Scale (Figley, 1995). Compared to its predecessors, the CF- Short Scale has fewer questions (only 13 compared to 30) and has improved validity and reliability (Adams, et al.). To clarify the definitions of STS, burnout, and CF, the CF- Short Scale includes subscales for burnout and STS, and it produces an overall CF score that is highly correlated with the original CF Scale measure (Adams, et al.).

**Work Stress and Burnout Self Efficacy Scale.** In accordance with Bandura's (2006) assertion that self-efficacy beliefs are context specific, the proposed study will use the Work Stress and Burnout Self Efficacy scale (WSBSE; Jing, 2008). In its pilot study, the 28-item WSBSE demonstrated high reliability (Cronbach's  $\alpha = .96$ ) when tested on a large, heterogenous sample of professionals. The WSBSE contains three subscales including work demands management self-efficacy, work resources management self-efficacy, and work stress and burnout symptoms management self-efficacy; the subscales also demonstrates high reliability with Cronbach's alphas .91, .85, and .93, respectively (Jing, 2008). Additionally, the scale demonstrated convergent validity with previously validated scales of generalized self-efficacy and optimism (Jing, 2008). Responses to all items are given a rating on a 7-point scale from (1)

not capable to (7) very capable. The mean of the scores within each subscale are calculated as the score for that subscale, and the total WSBSE score in this analysis represents the sum of the three subscale scores.

## **Recommendations & Conclusions**

There has yet to be sufficient empirical research evaluating interventions for treating STS, CF and burnout in military caregivers. Evaluation of current programs is of particular importance as psychologists and other helping professionals are faced with an overwhelming number of military patients suffering from PTSD and related mental disturbances. Appropriate planning and reassessment of current efforts is needed in order for progress to be made in a timely and efficient manner.

Following from Figley's model of CF, treatment should include educational information about CF, desensitization to traumatic stressors in order to strengthen one's ability to cope with them, and a combination of exposure and relaxation exercises (Figley, 2002). Additionally, social support enhances a therapist's ability to cope and is considered another vital component to treatment (Figley, 2002). Thus, in treating CF it is important to assess and enhance the therapists social support system (Figley). The SupportNet intervention should provide online tools for mental health providers to learn about CF and ways to prevent it. Empowering clinicians with information and promoting specialized training will likely help to prevent or reduce burnout and CF.

Consistent with Figley's (2002) assertion that social support is a vital component for treating CF, the SupportNet intervention provides additional social support within the mental health community. The SupportNet project plans to integrate skills training, helpful tools, and

social support through an interactive social networking platform. Empowering caregivers with skills related to their profession, skills to improve their self-care, and social support has the potential to provide significant benefits to primary caregivers at risk for CF and burnout.

Based on research to date on evaluating internet interventions, some important components to consider in the development of the SupportNet project include target population, program interactivity, synchronicity, and adherence. Related to target population and adherence, involving stakeholders in the development of the project may facilitate reaching the intended target groups as well as increase the likelihood of continued participation in the project (reduce dropout rate) due higher stakeholder investment in the process. Additionally, the inclusion of stakeholders in the development of the project would allow the intervention to be tailored to meet their identified needs. In developing the component of the SupportNet site, it will be important to define the “doses” of the intervention and the modality through which they are delivered, and to specify goals related to the degree of interactivity and synchronicity intended. To measure participant behavior and interactivity with the website, it would be beneficial to track participants’ activity and usage, including user logins, time spent, and navigation (clicks) within each module or component of the site. Also, a built-in feedback system for participants to rate and provide comments on the perceived usefulness of component would provide useful data for ongoing process evaluation.



## **Appendix 5**

### **Time 1 Survey**



University of Colorado  
Colorado Springs

**Trauma, Health & Hazards Center**

Dear Military Mental Health Providers,

No one knows the challenges of your work better than you. There are many who need your dedication, professionalism, knowledge, and experience.

As Mental Health Providers working with military personnel, you do your part of an unwritten social contract: You give back to the military community what we have all received from each soldier serving our country.

Now it is time to support you in your work.

The SupportNet program, sponsored by the US Army Medical Research and Materiel Command, Telemedicine & Advanced Technology Research Center (TATRC) and in connection with the Trauma Health and Hazards Center at the University of Colorado at Colorado Springs, was designed to better understand your everyday work challenges and to establish a network of support that can serve and help you in your important and challenging work.

Today, we, the researchers and military trauma specialists, are inviting you to create that support system with us. The first step is the initial needs assessment and evaluation of the burdens and benefits related to your work.

Please complete the survey and help us to help you.

**Prof. Charles Benight, PhD**  
**Director**  
**Trauma, Health, and Hazards Center**  
**University of Colorado at Colorado Springs**



**Valerie Anderson, PsyD**  
**Military Trauma Specialist**  
**Clinical Director**  
**Trauma, Health, and Hazards Center**  
**University of Colorado at Colorado Springs**



## **Informed Consent: Please Read Before Proceeding**

**TITLE OF STUDY:** SupportNet for Frontline Providers: Secondary Trauma and Burnout Evaluation.

**SPONSORSHIP:** This study is funded through the Department of Defense Telemedicine and Advanced Technology Research Center.

**FOR QUESTIONS ABOUT THE STUDY, CONTACT:** Charles Benight Ph.D., 1420 Austin Bluffs Parkway, Colorado Springs, CO 80918, (719) 255-4180.

**PURPOSE:** You are invited to participate in a study on current coping levels of mental health providers working with military personnel. Your participation is specifically requested because you are currently providing mental health treatment to military personnel (active or retired). Participation is completely voluntary.

**DESCRIPTION:** A total of approximately 250 providers who are currently working with active duty or retired military personnel will be recruited into the study. If you decide to participate, the procedure for this study includes completing a series of questionnaires now and then again in 6 months. The questions are presented through a website called Survey Monkey and focus on your coping with work related stress. We request that you complete the survey within 2 weeks. The questions specifically address the challenge of working with combat trauma patients. You are free to not complete the following questionnaire. If you choose to complete the questions you are voluntarily consenting to do so. The completion time is approximately 25 to 35 minutes for the set of questions. We will email you in 6 months to remind you to complete the questions for the second time.

**TIME INVOLVEMENT:** Your time involvement will be approximately 25 to 35 minutes to complete survey. You will be asked to complete it now and then again in 6 months for a total time commitment of 1 to 1.25 hours.

**ALTERNATIVE:** Because this study is designed to collect information for research and not designed to benefit you directly, your alternative is to not participate.

**BENEFITS:** There is no direct benefit to you for participating in this research. The results of the study may provide valuable information concerning how mental health providers who are working with our active duty or retired military are coping with the stress associated with this work. This may help in planning support services to these providers.

**RISKS:** There is a chance that you will experience some emotional discomfort from answering questions related to how you are currently coping with your work. There are no physical risks involved in this study.

**PAYMENTS:** In accordance with DOD policy, there will be no payment for participation in this study.

**COSTS:** There will be no cost to you for participating in this study.

**CONFIDENTIALITY:** All study data will be stored on secure servers with extensive security features and backup systems. All information regarding this study is kept confidential and used only by designated members of the research team. Representatives from the University of Colorado at Colorado Springs and/or the U.S. Army Medical Research and Materiel Command (or the DOD) are authorized to review research records as part of their duty to protect human participants involved in research. Your data will be given a participant identification number. Your email identification will not be attached to any data but is necessary for us to link your time 1 and time 2 information. All computerized data will be password protected so that no one but the research team will have access to these data. The computerized data will be stored on a secured server at the university for 7 years. Published data will only refer to group comparisons and never to you individually.

**Health Insurance Portability and Accountability Act (HIPAA).** No private medical information will be collected in this study.

RIGHT TO WITHDRAWAL: Your participation in this study is completely voluntary. You are free to withdraw at any time. Refusal to participate will involve no penalty or loss of benefits, and you may withdraw at any time without penalty or loss of benefits.

DO I HAVE TO ACCEPT THIS AUTHORIZATION FORM? At the end of this form you will have the option to 'Accept' or 'Decline'. You do not have to 'accept' this authorization form. But if you do not, you will not be able to participate in this research study.

WILL MY DECISION TO ACCEPT OR DECLINE THIS STUDY HAVE ANY AFFECT ON MY EMPLOYMENT? No.

SUBJECT'S RIGHTS: You are free not to participate in this study. Your decision whether or not to participate will not affect your employment status. If you wish to participate in this study, you must indicate at the end of this document that you wish to proceed by clicking "I accept". If you decide to participate, you are free to withdraw your consent, including your authorization regarding the use and disclosure of your health information, and to discontinue participation at any time without prejudice to you. If you decide to withdraw, we ask that you notify Dr. Benight in writing and let him know that you are withdrawing from the study. His emailing address is benight@uccs.edu.

If you have disturbing thoughts or strong distress while completing this survey, please call one of our therapists at (719) 255-3764 or (719) 255-3763 or use our toll-free number (800) 990-8227 and ask for extension 3764 or 3763.

QUESTIONS: If you have any questions regarding your participation in this study you should contact Dr. Charles Benight at (719) 255-4180 or use our toll-free number (800) 990-8227 and ask for extension 4180. You may also contact the Chairperson of the Institutional Review Board at the University of Colorado at Colorado Springs at (719) 255-4150 or use our toll-free number (800) 990-8227 and ask for extension 4150

It is suggested that you print a copy of this form for your records.

Thank you. Your assistance with this research study is appreciated.

**\*After reading the Informed Consent Form do you want to take part in the study?**

Yes (Accept)

No (Decline)

**\*If you accept participation in this study, please provide a valid e-mail address below**

CLICKING "ACCEPT" INDICATES THAT YOU HAVE READ AND UNDERSTAND THE ABOVE INFORMATION, THAT YOU HAVE DECIDED TO PARTICIPATE BASED ON THE INFORMATION PROVIDED, AND THAT YOU HAVE BEEN ABLE TO ACCESS A COPY OF THIS FORM BY PRINTING IT FOR YOUR RECORDS.

## Background Information

Please reply to the following questions. Your answers will help us learn more about who completed the survey.

### Gender

- Male  
 Female

### In what state or U.S. territory do you live?

If not in the U.S., in what country do you live?

### In what year were you born? (enter 4-digit birth year; for example, 1976)

### In what month were you born?

### How many years of formal education do you have (from kindergarten to higher education)?

### Current relationship status:

- Long-term committed relationship (e.g., married or domestic partner)  
 Not in a relationship

### What is the highest level of school you have completed or the highest degree you have received?

- High school graduate  
 Some college  
 Associate's degree  
 Bachelor's degree  
 Master's degree  
 Doctorate or professional degree

**Major job activities (check all that apply):**

- Case management
- Nursing
- Medication management
- Emergency crisis intervention
- Psychotherapy/Counseling
- Spiritual support
- Clinical supervision for mental health professionals
- Psychological or psychiatric assessment

Other (please specify)

**What is your primary professional role?**

- Psychiatrist
- Medical doctor (MD, DO)
- Clinical psychologist
- Physician assistant
- Counselor or psychotherapist
- Social worker
- Clinical or psychiatric social worker
- Registered nurse
- Psychiatric or mental health nurse practitioner
- Behavioral analyst
- Expressive or art therapist
- Chaplain
- Family advocate

Other (please specify)

**If you provide therapy, what approach do you use? (check all that apply)**

- DOES NOT APPLY
- CBT - Cognitive Behavioral Therapy
- CPT - Cognitive Processing Therapy
- PE - Prolonged Exposure
- EMDR - Eye Movement Desensitization and Reprocessing
- Stress inoculation therapy
- Group therapy
- Brief psychodynamic psychotherapy
- Interpersonal therapy
- Family therapy

Other (please specify)

**Which of the following categories best describes your employment status?**

- Working 1-19 hours per week
- Working 20-39 hours per week
- Working 40 or more hours per week
- Not employed, looking for work
- Not employed, NOT looking for work
- Retired, not working
- Disabled, not able to work

**Type of employment (check all that apply):**

- Employee of a for-profit company or business or of an individual, for wages, salary, or commissions
- Employee of a not-for-profit, tax-exempt, or charitable organization
- Local government employee (city, county, etc.)
- State government employee
- Federal government employee or active duty military
- Individual private practice
- Group private practice
- Working without pay

Other (please specify)

**Current military status:**

- Active duty military
- Reserves or National Guard
- Retired or former military
- No military service

**Have you ever been deployed to a combat zone?**

- Yes
- No

**How many years of experience do you have as a mental health professional?**

**How many active patients do you have in your caseload?**

Active duty military patients:

Reserves or National Guard patients:

Retired or former military patients:

Military family members:

Non-military patients:

**How many hours of clinical supervision or consultation do you receive each month?**

Individual clinical supervision or consultation:

Group clinical supervision or consultation:

**Are you working in an embedded team?**

- Yes
- No
- I do not know

**What is your current duty station?**

## ICAWS

**For each question below, indicate how often you experienced interpersonal conflicts at work during the PAST MONTH.**

	Less than once per month or never	Once or twice per month	Once or twice per week	Once or twice per day	Several times per day
How often do you get into arguments with others at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do other people yell at you at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often are people rude to you at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do other people do nasty things to you at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often does your responsibility for the patient conflict with the responsibilities of your job?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**The following items relate to organizational constraints at your work during the PAST MONTH.**

**How often are you constrained by:**

	Less than once per month or never	Once or twice per month	Once or twice per week	Once or twice per day	Several times per day
Poor equipment or supplies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizational rules and procedures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other employees.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your supervisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of equipment or supplies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interruptions by other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of necessary information about what to do or how to do it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conflicting job demands.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate help from others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incorrect instructions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too much paperwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too many patients.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## QWI

**Describe your work during the PAST MONTH. Please indicate your answer for each question:**

	Less than once per month or never	Once or twice per month	Once or twice per week	Once or twice per day	Several times per day
How often does your job require you to work very fast?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often does your job require you to work very hard?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often does your job leave you with little time to get things done?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often is there a great deal to be done?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have to do more work than you can do well?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have less work than you would like to have?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## STES

**Thinking back on your professional career, please answer "Yes" to the events to which YOU WERE EXPOSED THROUGH YOUR WORK WITH PATIENTS. Then indicate the impact that hearing about this event has had on you.**

### TYPES of traumatic events:

	INDIRECT exposure to event	Impact on you
1. Natural disaster (e.g., flood, hurricane, tornado, wildfire, earthquake).	<input type="text"/>	<input type="text"/>
2. Transportation accident (e.g., car accident, train accident, plane crash).	<input type="text"/>	<input type="text"/>
3. Other serious accident (e.g., fire, explosion, building collapse).	<input type="text"/>	<input type="text"/>
4. Physical assault (e.g., being attacked, hit, shot, stabbed).	<input type="text"/>	<input type="text"/>
5. Sexual assault (e.g., rape or attempted rape, unwanted sexual experience).	<input type="text"/>	<input type="text"/>
6. Other life threatening crime (e.g., home invasion, hostage situation).	<input type="text"/>	<input type="text"/>
7. Military combat or exposure to a war-zone.	<input type="text"/>	<input type="text"/>
8. Life-threatening illness or injury of your client or someone close.	<input type="text"/>	<input type="text"/>
9. Sudden, unexpected death of someone close.	<input type="text"/>	<input type="text"/>
Any other stressful event or experience.	<input type="text"/>	<input type="text"/>

If yes, specify the traumatic event:

**How many of the TYPES of traumatic events listed above have you PERSONALLY experienced?**

- 1     2     3     4     5     6     7     8     All

**During your entire professional career, how many of your patients experienced at least one of the above events**

- None     1 or 2     10 or less     50 or less     100 or less     A few hundred     A few thousand

**During your entire professional career, how frequently have you worked with patients who experienced at least one of the above events**

- Never     A few days in a year     One day a month     A few days a month     One day a week     A few days a week     Every day

**How often did you discuss these patients with your colleagues?**

- Never       A few days  
in a year       One day a  
month       A few days a  
month       One day a  
week       A few days a  
week       Every day

**Thinking back on your whole professional career, what percentage of your patients have been traumatized?**

**Thinking back on your whole professional career, what percentage of your patients have described a graphic military combat experience?**

## RCS

**Please indicate how often in the PAST MONTH you have been doing the things listed below.**

### **PART A: IN THE PAST MONTH...**

	Not at all	A little	Somewhat	A lot
I was not taking care of important responsibilities (work, family, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was communicating well with my friends, wife/husband, friends, kids.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was reacting in a very coordinated manner to get things accomplished.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was connecting with people to get support.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was letting things that bug me roll off my back.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was eating and drinking things that are good for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was providing for my partner's intimacy needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was reacting very haphazardly (bouncing off of things, not getting tasks done).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was finding myself yelling at my friends, wife/husband, kids, pets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was thinking more often that things in the world are black & white (good & bad).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was withdrawing from people I care about.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was becoming more focused on myself and how I'm handling things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was taking care of things that I need to in my life (work, family, personal life, etc).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**PART B: IN THE PAST MONTH...**

	Not at all	A little	Somewhat	A lot
I was reaching out to people who care about me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was showing caring or loving support to my friends, family, or spouse/partner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was showing respect for people and not judging them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was pushing others away.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to let go of things that upset me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was aware of others needs and able to respond to them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to react to things in a very organized and effective manner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was seeing the good and bad in all things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was striking out at people or pets (verbally or physically).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was taking care of myself emotionally.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was taking care of myself physically.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was taking care of my spiritual needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>













## STSS

**The following is a list of statements made by persons who have been impacted by their work with traumatized patients. Read each statement, then indicate how frequently the statement was true for you in the PAST MONTH.**

### **PART A: As a result of my work with traumatized patients ...**

	Never	Rarely	Occasionally	Often	Very often
I felt emotionally numb	<input type="radio"/>				
My heart started pounding when I thought about my work with patients	<input type="radio"/>				
It seemed as if I was reliving the trauma(s) experienced by my patient(s)	<input type="radio"/>				
I had trouble sleeping	<input type="radio"/>				
I felt discouraged about the future	<input type="radio"/>				
Reminders of my work with patients upset me	<input type="radio"/>				
I had little interest in being around others	<input type="radio"/>				
I felt jumpy	<input type="radio"/>				
I was less active than usual	<input type="radio"/>				

**How frequently were the statements true for you in the PAST MONTH?**

**PART B: As a result of my work with traumatized patients ...**

	Never	Rarely	Occasionally	Often	Very often
I thought about my work with patients when I didn't intend to	<input type="radio"/>				
I had trouble concentrating	<input type="radio"/>				
I avoided people, places, or things that reminded me of my work with patients	<input type="radio"/>				
I had disturbing dreams about my work with patients	<input type="radio"/>				
I wanted to avoid working with some patients	<input type="radio"/>				
I was easily annoyed	<input type="radio"/>				
I expected something bad to happen	<input type="radio"/>				
I noticed gaps in my memory about patient sessions	<input type="radio"/>				

## OLBI

**Below are statements that relate to your well-being at work. Please indicate the degree of your agreement with each statement.**

### PART A

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I always find new and interesting aspects in my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are days when I feel tired before I arrive at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It happens more and more often that I talk about my work in a negative way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After work, I tend to need more time than in the past in order to relax and feel better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can tolerate the pressure of my work very well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lately, I tend to think less at work and do my job almost mechanically	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find my work to be a positive challenge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During my work, I often feel emotionally drained	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate the degree of your agreement with each statement.**

**PART B**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Over time, one can become disconnected from this type of work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After working, I have enough energy for my leisure activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I feel sickened by my work tasks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After my work, I usually feel worn out and weary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This is the only type of work that I can imagine myself doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Usually, I can manage the amount of my work well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel more and more engaged in my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I work, I usually feel energized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>







## Thank You For Completing the Survey

If you have completed the survey for the first time, you will be invited in 6 months to complete the survey again. We will send you the invitation at the email address you have provided.

After collecting data from both assessments, we would like to share the results of the study with you.

### Would you like to receive email information about (check all that apply):

- Summary of the survey results
- Services that we may offer
- Events or conferences we may host

### Do you have any comments on the survey?

If you have disturbing thoughts or strong distress as the result of completing the survey, please contact one of our therapists at: (719) 255-3764 or (719) 255-3763.

Thank you for completing the survey. We appreciate your help!



University of Colorado  
Colorado Springs

Trauma, Health & Hazards Center

Prof. Charles Benight, PhD  
THHC Director

Valerie Anderson, PsyD  
THHC Clinical Director

Trauma, Health, and Hazard Center (THHC), University of Colorado at Colorado Springs, 1851 Austin Bluffs Parkway, Suite 102, Colorado Springs, Colorado, 80918



## **Appendix 6**

### **Time 2 Survey**



University of Colorado  
Colorado Springs

Trauma, Health & Hazards Center

Dear Military Mental Health Provider,

Six months ago you completed a survey about military behavioral health providers as a part of the SupportNet program and agreed to participate in the second wave of the study. We had an excellent response, and we greatly appreciate your feedback and your time. As a part of your continued participation in this study, it is now time to complete the second and final survey.

As you'll recall, the SupportNet program is sponsored by the US Army Medical Research and Materiel Command, Telemedicine & Advanced Technology Research Center (TATRC) in connection with the Trauma Health and Hazards Center at the University of Colorado at Colorado Springs (UCCS). This study is designed to better understand your everyday work challenges and to establish a network of support to serve and help you in your important and challenging work.

Before starting the second survey, we would like to tell you the following:

- a) It will take approximately 25-30 minutes to complete the survey.
- b) You will be prompted to enter your email address at the beginning of the survey. We ask that you use **THE SAME EMAIL ADDRESS YOU PROVIDED IN THE FIRST SURVEY** (i.e., the address to which we sent you the invitation to the second survey).
- c) You may recognize some of the questions in the second survey. However, the time frame of some of the questions has changed. We ask that you carefully read the instructions at the top of each page.
- d) You provided your informed consent during the first survey and will not be asked to do so again. However, if you wish to review or withdraw the informed consent, please visit this link: [https://www.surveymonkey.com/s/SupportNet\\_Informed\\_Consent](https://www.surveymonkey.com/s/SupportNet_Informed_Consent)
- e) If you have any questions about the survey, please contact: Charles Benight, Ph.D., 1420 Austin Bluffs Parkway, Colorado Springs, CO 80918, (719) 255-4180.
- f) If you experience disturbing thoughts or strong distress while completing this survey, please call one of our therapists at (719) 255-3764 or (719) 255-3763 or use our toll-free number (800) 990-8227 and ask for extension 3764 or 3763.

Again, we greatly appreciate your participation in this program. Thank you!

**Prof. Charles Benight, PhD**  
**Director**  
**Trauma, Health, and Hazards Center**  
**University of Colorado at Colorado Springs**



**Valerie Anderson, PsyD**  
**Military Trauma Specialist**  
**Clinical Director**  
**Trauma, Health, and Hazards Center**  
**University of Colorado at Colorado Springs**



## Background Information

Please reply to the following questions. Your answers will help us learn more about who completed the survey.

**\*Enter THE SAME e-mail address you provided in the first survey (i.e., the address to which we sent you the invitation to the second survey)**

**In what year were you born? (enter 4-digit birth year; for example, 1976)**

**In what month were you born?**

**In what state or U.S. territory do you live?**

If not in the U.S., in what country do you live?

**Current relationship status:**

- Long-term committed relationship (e.g., married or domestic partner)
- Not in a relationship

**What is the highest level of school you have completed or the highest degree you have received?**

- High school graduate
- Some college
- Associate's degree
- Bachelor's degree
- Master's degree
- Doctorate or professional degree

**Major job activities (check all that apply):**

- Case management
- Nursing
- Medication management
- Emergency crisis intervention
- Psychotherapy/Counseling
- Spiritual support
- Clinical supervision for mental health professionals
- Psychological or psychiatric assessment
- Administration
- Research
- Training

Other (please specify)

**What is your primary professional role?**

- Psychiatrist
- Medical doctor (MD, DO)
- Clinical psychologist
- Physician assistant
- Counselor or psychotherapist
- Social worker
- Clinical or psychiatric social worker
- Registered nurse
- Psychiatric or mental health nurse practitioner
- Behavioral analyst
- Expressive or art therapist
- Chaplain
- Family advocate
- Neuropsychologist
- Marriage and family therapist

Other (please specify)

**If you provide therapy, what approach do you use? (check all that apply)**

- DOES NOT APPLY
- CBT - Cognitive Behavioral Therapy
- CPT - Cognitive Processing Therapy
- PE - Prolonged Exposure
- EMDR - Eye Movement Desensitization and Reprocessing
- Stress inoculation therapy
- Group therapy
- Brief psychodynamic psychotherapy
- Interpersonal therapy
- Family therapy
- Play therapy
- Neurofeedback/Neuropsychology
- DBT - Dialectic Behavioral Therapy
- REBT - Rational Emotive Behavioral Therapy
- ACT - Acceptance and Commitment Therapy
- Solution-Focused Therapy
- Hypnosis

Other (please specify)

**Which of the following categories best describes your employment status?**

- Working 1-19 hours per week
- Working 20-39 hours per week
- Working 40 or more hours per week
- Not employed, looking for work
- Not employed, NOT looking for work
- Retired, not working
- Disabled, not able to work

**Type of employment (check all that apply):**

- Employee of a for-profit company or business or of an individual, for wages, salary, or commissions
- Employee of a not-for-profit, tax-exempt, or charitable organization
- Local government employee (city, county, etc.)
- State government employee
- Federal government employee or active duty military
- Individual private practice
- Group private practice
- Working without pay

Other (please specify)

**Current military status:**

- Active duty military
- Reserves or National Guard
- Retired or former military
- No military service

**Have you ever been deployed to a combat zone?**

- Yes
- No

**How many active patients do you have in your caseload?**

Active duty military patients:

Reserves or National Guard patients:

Retired or former military patients:

Military family members:

Non-military patients:

**How many hours of clinical supervision or consultation do you receive each month?**

Individual clinical supervision or consultation:

Group clinical supervision or consultation:

**Are you working in an embedded team?**

- Yes
- No
- I do not know

**If you are a Military, what is your current duty station?**

## ICAWS

**For each question below, indicate how often you experienced interpersonal conflicts at work during the PAST MONTH.**

	Less than once per month or never	Once or twice per month	Once or twice per week	Once or twice per day	Several times per day
How often do you get into arguments with others at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do other people yell at you at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often are people rude to you at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do other people do nasty things to you at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often does your responsibility for the patient conflict with the responsibilities of your job?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**The following items relate to organizational constraints at your work during the PAST MONTH.**

**How often are you constrained by:**

	Less than once per month or never	Once or twice per month	Once or twice per week	Once or twice per day	Several times per day
Poor equipment or supplies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizational rules and procedures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other employees.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your supervisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of equipment or supplies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interruptions by other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of necessary information about what to do or how to do it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conflicting job demands.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate help from others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incorrect instructions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too much paperwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too many patients.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**QWI**

**Describe your work during the PAST MONTH. Please indicate your answer for each question:**

	Less than once per month or never	Once or twice per month	Once or twice per week	Once or twice per day	Several times per day
How often does your job require you to work very fast?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often does your job require you to work very hard?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often does your job leave you with little time to get things done?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often is there a great deal to be done?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have to do more work than you can do well?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have less work than you would like to have?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## STES

**Thinking back on the LAST 6 MONTHS, please answer "Yes" to the events to which YOU WERE EXPOSED THROUGH YOUR WORK WITH PATIENTS. Then indicate the impact that hearing about this event has had on you.**

### TYPES of traumatic events:

	INDIRECT exposure to event	Impact on you
1. Natural disaster (e.g., flood, hurricane, tornado, wildfire, earthquake).	<input type="text"/>	<input type="text"/>
2. Transportation accident (e.g., car accident, train accident, plane crash).	<input type="text"/>	<input type="text"/>
3. Other serious accident (e.g., fire, explosion, building collapse).	<input type="text"/>	<input type="text"/>
4. Physical assault (e.g., being attacked, hit, shot, stabbed).	<input type="text"/>	<input type="text"/>
5. Sexual assault (e.g., rape or attempted rape, unwanted sexual experience).	<input type="text"/>	<input type="text"/>
6. Other life threatening crime (e.g., home invasion, hostage situation).	<input type="text"/>	<input type="text"/>
7. Military combat or exposure to a war-zone.	<input type="text"/>	<input type="text"/>
8. Life-threatening illness or injury of your client or someone close.	<input type="text"/>	<input type="text"/>
9. Sudden, unexpected death of someone close.	<input type="text"/>	<input type="text"/>
Any other stressful event or experience.	<input type="text"/>	<input type="text"/>

If yes, specify the traumatic event:

**How many of the TYPES of traumatic events listed above have you PERSONALLY experienced in the LAST 6 MONTHS?**

- None  1  2  3  4  5  6  7  8  All

**During the LAST 6 MONTHS, how many of your patients experienced at least one of the above events?**

- None  1 or 2  10 or less  50 or less  100 or less  A few hundred  A few thousand

**During the LAST 6 MONTHS, how frequently have you worked with patients who experienced at least one of the above events?**

- Never  A few days in a year  One day a month  A few days a month  One day a week  A few days a week  Every day

**How often did you discuss these patients with your colleagues in the LAST 6 MONTHS?**

- Never       A few days  
in a year       One day a  
month       A few days a  
month       One day a  
week       A few days a  
week       Every day

**Thinking back on the LAST 6 MONTHS, what percentage of your patients have been traumatized?**

**Thinking back on the LAST 6 MONTHS, what percentage of your patients have described a graphic military combat experience?**

**Please indicate how often in the PAST MONTH you have been doing the things listed below.**

**PART A: IN THE PAST MONTH...**

	Not at all	A little	Somewhat	A lot
I was not taking care of important responsibilities (work, family, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was communicating well with my friends, wife/husband, friends, kids.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was reacting in a very coordinated manner to get things accomplished.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was connecting with people to get support.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was letting things that bug me roll off my back.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was eating and drinking things that are good for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was providing for my partner's intimacy needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was reacting very haphazardly (bouncing off of things, not getting tasks done).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was finding myself yelling at my friends, wife/husband, kids, pets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was thinking more often that things in the world are black & white (good & bad).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was withdrawing from people I care about.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was becoming more focused on myself and how I'm handling things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was taking care of things that I need to in my life (work, family, personal life, etc).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**PART B: IN THE PAST MONTH...**

	Not at all	A little	Somewhat	A lot
I was reaching out to people who care about me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was showing caring or loving support to my friends, family, or spouse/partner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was showing respect for people and not judging them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was pushing others away.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to let go of things that upset me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was aware of others needs and able to respond to them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to react to things in a very organized and effective manner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was seeing the good and bad in all things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was striking out at people or pets (verbally or physically).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was taking care of myself emotionally.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was taking care of myself physically.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was taking care of my spiritual needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>













## STSS

**The following is a list of statements made by persons who have been impacted by their work with traumatized patients. Read each statement, then indicate how frequently the statement was true for you in the PAST MONTH.**

### **PART A: As a result of my work with traumatized patients ...**

	Never	Rarely	Occasionally	Often	Very often
I felt emotionally numb	<input type="radio"/>				
My heart started pounding when I thought about my work with patients	<input type="radio"/>				
It seemed as if I was reliving the trauma(s) experienced by my patient(s)	<input type="radio"/>				
I had trouble sleeping	<input type="radio"/>				
I felt discouraged about the future	<input type="radio"/>				
Reminders of my work with patients upset me	<input type="radio"/>				
I had little interest in being around others	<input type="radio"/>				
I felt jumpy	<input type="radio"/>				
I was less active than usual	<input type="radio"/>				

**How frequently were the statements true for you in the PAST MONTH?**

**PART B: As a result of my work with traumatized patients ...**

	Never	Rarely	Occasionally	Often	Very often
I thought about my work with patients when I didn't intend to	<input type="radio"/>				
I had trouble concentrating	<input type="radio"/>				
I avoided people, places, or things that reminded me of my work with patients	<input type="radio"/>				
I had disturbing dreams about my work with patients	<input type="radio"/>				
I wanted to avoid working with some patients	<input type="radio"/>				
I was easily annoyed	<input type="radio"/>				
I expected something bad to happen	<input type="radio"/>				
I noticed gaps in my memory about patient sessions	<input type="radio"/>				

## OLBI

**Below are statements that relate to your well-being at work. Please indicate the degree of your agreement with each statement.**

### PART A

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I always find new and interesting aspects in my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are days when I feel tired before I arrive at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It happens more and more often that I talk about my work in a negative way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After work, I tend to need more time than in the past in order to relax and feel better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can tolerate the pressure of my work very well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lately, I tend to think less at work and do my job almost mechanically	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find my work to be a positive challenge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During my work, I often feel emotionally drained	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate the degree of your agreement with each statement.**

**PART B**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Over time, one can become disconnected from this type of work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After working, I have enough energy for my leisure activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I feel sickened by my work tasks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After my work, I usually feel worn out and weary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This is the only type of work that I can imagine myself doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Usually, I can manage the amount of my work well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel more and more engaged in my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I work, I usually feel energized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>







## Thank You For Completing the Survey

### Would you like to receive email information about (check all that apply):

- Summary of the survey results
- Services that we may offer
- Events or conferences we may host

### Do you have any comments on the survey?

If you have disturbing thoughts or strong distress as the result of completing the survey, please contact one of our therapists at: (719) 255-3764 or (719) 255-3763.

Thank you for completing the survey. We appreciate your help!



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## Appendix 7

## 28 PROFESSIONAL BURNOUT

Charles Benight and Roman Cieslak

Researchers and practitioners have shown increasing interest in job burnout since the term was coined independently by Herbert J. Freudenberger and Christina Maslach in the late 1970s. As of May 2012 there were 3,682 publications recorded in the Web of Knowledge database that had job or work burnout in the topic. In 2010 there were 419, and in 2011 there were 493 such publications. These numbers show that job burnout is becoming one of the most popular fields of research in occupational health psychology.

The growing interest in job burnout has at least two sources. First, employees themselves have popularized the term “burnout” when describing their difficulties in dealing with intense work demands, challenging clients, and poor organizational resources. Second, occupational health psychologists have become increasingly focused on operationalizing the term, determining methods of assessment, validating different constructs, and applying theoretical systems to map burnout’s trajectory. This has led to intriguing debates concerning identification of risk and protective factors linked to burnout in an attempt to generate a knowledge base for intervention strategies. Despite the popular use of the term, the scientific arena is emerging with significant gaps between what we understand intuitively and what we understand through theory and evidence related to job burnout.

### DEFINITIONS AND MEASURES

There are many definitions and measures for job burnout. Job burnout is “a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by three dimensions of exhaustion, cynicism, and inefficacy” (Maslach, Schaufeli, & Leiter, 2001, p. 397). Although this definition is the most popular and was used for developing the frequently cited Maslach Burnout Inventory—General Survey (MBI-GS), it is not the only one. Three other definitions suggest that job burnout might be reduced to a single common experience: exhaustion. Each of these definitions has led to developing a different measure: Copenhagen Burnout Inventory (CBI), Burnout Measure (BM), Shirom-Melamed Burnout Measure (SMBM).

Demerouti and her colleagues proposed yet another conceptualization and measure of job burnout (Demerouti, Bakker, Vardakou, & Kantas, 2003). According to their conceptualization, job burnout consists of two dimensions: exhaustion and disengagement from work, which refers to “distancing oneself from one’s work and experiencing negative attitude toward the work objects, work content, or one’s work in general” (p. 14). Both dimensions are included in the Oldenburg Burnout Inventory (OLBI), an alternative to the MBI-GS. Conceptualization of exhaustion in the OLBI is broader than that in the Maslach measure, as

it is seen as “a consequence of intensive physical, affective, and cognitive strain, i.e., as a long-term consequence of prolonged exposure to certain job demands” (p. 14).

In all of these alternatives to the MBI-GS conceptualizations and measures, professional inefficacy (a hypothetical third component of job-burnout) is consistently regarded as a separate construct. Across all definitions the overarching contributing factor to burnout has been intense prolonged exposure to significant job demands. Burnout might also arise from other less obvious sources.

Recently, job burnout has been also perceived as the consequence of indirect exposure to trauma in professionals working with traumatized clients (Stamm, 2010). Job burnout is understood here in a different way than in other conceptualizations, mentioned above. This type of burnout is “associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively” (p. 13). Job burnout, along with secondary trauma reactions (e.g., post-traumatic stress symptoms) related to indirect trauma exposure, has important negative occupational and personal consequences including changes in cognitive beliefs about the self and the world.

#### ANTECEDENTS OF JOB BURNOUT

The list of job burnout antecedents is long, and includes both situational and individual factors. Two most frequently cited review papers on job burnout (Cordes & Dougherty, 1993; Maslach et al., 2001) indicated that job burnout might be caused or facilitated by work overload, time pressure, role conflict, role ambiguity, lack of social support, low control over work, low autonomy, and insufficient positive feedback. In addition to these job characteristics, important organizational, social, and cultural values that are not supported or realized through work are critical to consider. The following personality and individual difference factors also were found to be predictive of high job burnout: low hardiness (i.e., low commitment to job, low

job control, and tendency to appraise situation more like a threat than a challenge), external locus of control, passive or avoiding coping styles, low self-esteem, and low self-efficacy. Some demographic characteristics that contribute to job burnout include younger age or limited experience, being unmarried or single, and higher level of education.

#### THEORETICAL MODELS OF JOB BURNOUT

Along with the research aimed at testing the correlates (or antecedents) of job burnout, several theoretical models were proposed to explain processes and psychological mechanisms involved in developing job burnout. One of the popular theories is that job burnout is a prolonged response to chronic work stress. Although this thesis appeals to many practitioners and scientists, there are other symptoms that, along with the job burnout, may be considered the effect of prolonged exposure to chronic job-related stress such as depression and work dissatisfaction. This theory is not specific enough to explain processes that are unique to job burnout.

Other theoretical approaches, so-called developmental models, concentrate on developmental trajectories of job burnout over time. In these approaches, job burnout is not a static constellation of symptoms but a process that, for example, may start from emotional exhaustion leading to cynicism, which finally affects perception of inefficacy at work.

The job demands-resources (JD-R) model is currently the most influential theoretical approach to understand job burnout (Demerouti & Bakker, 2011). According to this model, when defining risk and protective factors for job burnout one should consider the occupational setting. These factors, different for various work settings, can be categorized into two broad categories: job demands and job resources. Job demands refer to those aspects of the job that require effort or skills and therefore lead to some physiological and psychological costs. Job resources relate to components of the job that are helpful in (1) achieving work-related

goals, (2) reducing job demands and costs associated with these demands, and (3) stimulating personal development (Demerouti & Bakker, 2011). Through health impairment and motivational processes, job demands and resources directly, or in interaction with each other, affect job burnout and ultimately affect work engagement. The JD-R model shows that from organizational and individual perspectives it is important to know what factors lead to a negative outcome, such as job burnout. At the same time, however, knowledge about factors promoting positive outcomes, such as work engagement, is also necessary.

#### WORK ENGAGEMENT

Work engagement is sometimes perceived as the opposite end of the job burnout dimension and therefore is characterized by high energy, involvement, and perceived efficacy at work (Maslach et al., 2001). Another conceptualization of work engagement is of an independent construct, which is negatively correlated with job burnout and defined by three symptoms: vigor (e.g., a high level of energy and persistence), dedication (e.g., involvement and a sense of significance of the job), and absorption (e.g., concentration on a job to the extent that one has a sense of time passing quickly; Bakker, Schaufeli, Leiter, & Taris, 2008). Work engagement is often measured with the Utrecht Work Engagement Scale (UWES, 17- or 9-item version).

#### JOB BURNOUT AND WORK ENGAGEMENT AMONG PSYCHOLOGISTS

For practitioners, the notion that work engagement is separate from the job burnout phenomenon has important implications. Those practitioners who want to optimize their functioning at work and improve work-related well-being should not only take some actions to prevent job burnout, but also take some, probably different, actions to increase work engagement. In thinking about ways to foster

work engagement and reduce job burnout, one must consider both contributing factors of resources and demands. Generating increased resources such as social support may influence work engagement but not reduce burnout. Whereas reducing job demands might positively impact burnout, it may not increase work engagement. Importantly, studies among practicing psychologists have shown that work-home conflict and home-work conflict are positively related to job burnout and that these types of conflicts may mediate the effects of job demands and resources on job burnout (Rupert, Stevanovic, & Hunley, 2009). Thus, determining an appropriate balance between personal and professional demands and resources is an important challenge for all psychologists.

#### CONSEQUENCES OF JOB BURNOUT

Job burnout has significant consequences (see Maslach et al., 2001 for review). Most of them relate to job performance and subjective well-being or health. Interestingly, the same outcomes are included in studies on consequences of work stress. This indicates possible connections or overlaps between work stress and burnout processes. In terms of job performance, high job burnout is related to higher absenteeism, higher turnover or intention to quit the job, lower effectiveness at work, and low job or organizational commitment. It may also affect organizational standards and culture, making burned out individuals less focused on high quality performance and respecting human values in day-to-day operations.

Discussion of health-related outcomes of job burnout should be contextualized in the existing diagnostic categories and diagnostic systems. Job burnout symptomatology partially reassembles diagnostic criteria for neurasthenia, described in the World Health Organization's International Classification of Diseases (ICD-10) under code F48, "other neurotic disorders." The term "burn-out," defined as a "state of vital exhaustion," may also be found under code Z73.0 in "problems

related to life-management difficulty.” Job burnout is not recognized in the *Diagnostic and Statistical Manual* (DSM-IV-TR) but, in the current proposal for the DSM revision, it might be classified under category G 05 “trauma- or stressor-related disorder not elsewhere classified.”

Physiological correlates of job burnout are typical of the effects of prolonged exposure to stress and include more frequent and stronger somatic complaints (e.g., headaches, chest pains, nausea, and gastrointestinal symptoms). People with high job stress are also at risk for developing depression and anxiety, but the causality of this relationship is not clear, as both anxiety and depression may also contribute to the development of job burnout.

#### SPILOVER AND CROSSOVER EFFECTS OF JOB BURNOUT

Most definitions assume that job burnout is related to only one domain of human functioning (i.e., work and job-related activities). However, the consequences of job burnout may be experienced in other domains of life, such as family life. This interdomain transmission of the effects is called spillover. The example of negative spillover effect might be a situation when family roles or activities are disrupted due to job burnout. Positive spillover may take place when resources from one domain (e.g., family life) are used as a protective factor, acting against developing job burnout or reducing its negative consequences. For example, fulfilled family life and satisfactory family relationships may protect from emotional exhaustion and cynicism.

Whereas spillover is an intrapersonal transfer of consequences across different domains of functioning, crossover is an interpersonal transmutation of consequences. For example, an employee’s burnout has an effect on a spouse’s burnout and in that indirect way reduces life satisfaction of the spouse (Demerouti, Bakker, & Schaufeli, 2005). These are critical implications to consider in developing new interventions related to burnout.

#### PREDICTORS OF JOB BURNOUT AMONG MILITARY PSYCHOLOGISTS

There is limited evidence for the prevalence of job burnout and its risk factors among military mental health providers. Ballenger-Browning et al. (2011) showed that in a nonrepresentative sample of 97 providers, 27.8% reported high levels of emotional exhaustion, 18.6% had high levels of depersonalization, and 4.1% had indicated low levels of personal accomplishment, measured with the MBI version for human services (MBI-HSS). The intensity of job burnout among military mental health providers was compared to burnout levels among 730 civilian mental health providers. The results showed that military providers had lower depersonalization and higher personal accomplishment (Ballenger-Browning et al., 2011). The same study showed that risk factors for emotional exhaustion were: being a psychiatrist (comparing to other mental health professions), working long hours, and being female. High depersonalization was predicted by having a high percentage of patients with personality disorders and low percentage of patients with traumatic brain injury in providers’ caseloads. Low personal accomplishment was reported more often by those who were not psychologists, were seeing a high number of patients per week, indicated low support from work and reported fewer years of clinical experience.

#### RECOMMENDATIONS FOR MILITARY PSYCHOLOGISTS

Recommendations for job burnout prevention among military psychologists are difficult to provide given the limited data in this area. However, the general (i.e., useful for a majority of working population) or specific (i.e., unique for job demands in that profession) interventions can focus on the individual or the organization. Given the unique nature of the military hierarchical environment, organizational interventions become more complex. However, efforts should be made to increase workload control, work flexibility, and enhancement

of peer and supervisory support. Individual interventions that promote individual resource development (self-care strategies, work/home balance, symptom processing), professional skill promotion, and social resource enhancement (peer support, friends, etc.) prove to be effective in many cases. Military psychologists (Linnerooth, Mrdjenovich, and Moore, 2011) shared the professional experiences that helped them to cope with job burnout. Although the job demands were different for the predeployment, deployment, and postdeployment phases, the coping mechanisms were similar across these phases and included investment in individual resources (e.g., military and professional trainings), developing social network (family and professional relations), and acting proactively with the awareness that ethics standards and self-care are important parts of military psychologists' jobs. There is more work to be done to help determine the most beneficial methods to assist military psychologists.

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## Appendix 8

## A Meta-Analysis of the Relationship Between Job Burnout and Secondary Traumatic Stress Among Workers With Indirect Exposure to Trauma

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The study provides a systematic review of the empirical evidence for associations between job burnout and secondary traumatic stress (STS) among professionals working with trauma survivors, indirectly exposed to traumatic material. Differences in the conceptualization and measurement of job burnout and STS were assumed to moderate these associations. A systematic review of literature yielded 41 original studies, analyzing data from a total of 8,256 workers. Meta-analysis indicated that associations between job burnout and STS were strong (weighted  $r = .69$ ). Studies applying measures developed within the compassion fatigue framework (one of the conceptualizations of job burnout and STS) showed significantly stronger relationships between job burnout and STS, indicating a substantial overlap between measures (weighted  $r = .74$ ; 55% of shared variance). Research applying other frameworks and measures of job burnout (i.e., stressing the role of emotional exhaustion) and STS (i.e., focusing on symptoms resembling posttraumatic stress disorder or a cognitive shift specific for vicarious trauma) showed weaker, although still substantial associations (weighted  $r = .58$ ; 34% of shared variance). Significantly stronger associations between job burnout and STS were found for: (a) studies conducted in the United States compared to other countries; (b) studies using English-language versions of the questionnaires compared to other-language versions, and (c) research in predominantly female samples. The results suggest that, due to high correlations between job burnout and STS, there is a substantial likelihood that a professional exposed to secondary trauma would report similar levels of job burnout and STS, particularly if job burnout and STS were measured within the framework of compassion fatigue.

**Keywords:** secondary trauma, secondary exposure, secondary traumatic stress, job burnout, meta-analysis, compassion fatigue

The concept of job burnout was originally developed to assess negative consequences of work-related exposure to a broad range of stressful situations experienced by human services employees (Freudenberger, 1974; Maslach, 1976; Maslach, Schaufeli, & Leiter, 2001). In particular, the provision of care to traumatized populations may be infused with high levels of burnout among mental health care providers and mental health care administrators (Newell & MacNeil, 2011). Burnout among health care providers

relates to their well-being, the quality of life of their patients, and caring effectiveness (Cheung & Chow, 2011).

Recent research on mental health providers has extended the focus beyond job burnout to investigate the consequences of exposure to specific stressors, such as contact with people who have experienced traumatic events, exposure to graphic trauma content (reported by the survivor), or exposure to people's cruelty to one another (Pearlman & Saakvitne, 1995). These job-related

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stressors, specific to human service professionals working with trauma victims or survivors, have been labeled with several terms, such as *secondary exposure* or *indirect exposure to trauma*.

Professionals exposed to trauma indirectly, through their work, may suffer from consequences or symptoms unique to this occupational group, compared to other occupations (Beck, 2011). These specific consequences of indirect trauma exposure have been conceptualized as secondary or vicarious traumatization (McCann & Pearlman, 1990), secondary posttraumatic stress disorder (PTSD; Bride, Robinson, Yegidis, & Figley, 2004), and compassion fatigue (Figley, 2002). Significant elevation of symptoms of compassion fatigue may be expected among mental health providers, including those working in the public sector setting (Newell & MacNeil, 2011).

Secondary trauma or secondary PTSD may occur due to work-related indirect exposure and in the context of family-related indirect exposure. Besides human services workers, populations at risk for indirect exposure include family members or intimate partners of survivors of various types of trauma, for example, veterans or active duty soldiers, motor vehicle trauma survivors, or abuse survivors (cf. Lambert, Engh, Hasbun, & Holzer, 2012). The present study focused on consequences of work-related exposure and, therefore, our analyses excluded family-related indirect exposure.

The ongoing discussion about the constructs of burnout, compassion fatigue, and secondary traumatization (Jenkins & Baird, 2002) has shown that although there are subtle differences between them, they are also partially overlapping. So far, the debate has been dominated by narrative analyses of these differences with limited empirical evaluation (R. E. Adams, Boscarino, & Figley, 2006; Jenkins & Baird, 2002; Sabo, 2011; Thomas & Wilson, 2004). In contrast, comprehensive analyses empirically testing similarities and differences between respective constructs, and thus providing overarching conclusions across the recent research, are clearly needed. To fill this void, our meta-analysis investigated the relationships among job burnout and psychosocial consequences of a secondary exposure to trauma (i.e., compassion fatigue, secondary PTSD, or vicarious trauma; collectively, secondary traumatic stress [STS]) in professionals working with trauma survivors.

### Job Burnout

Job burnout may be defined as a prolonged three-dimensional response to job stressors, encompassing exhaustion, cynicism, and inefficacy (Maslach et al., 2001). In contrast to the proposal of Maslach et al. (2001), three related approaches suggest that job burnout might be reduced to a single common experience: exhaustion. The first of these approaches defines as physical, emotional, and mental exhaustion (Malach-Pines, 2005). According to the second conceptualization, burnout concerns physical and psychological fatigue and exhaustion (Kristensen, Borritz, Villadsen, & Christensen, 2005), measured in a domain-specific context. The third approach defines burnout as physical, emotional energy, and cognitive exhaustion, which may result in depletion of coping resources (Shirom & Melamed, 2006).

Not all contemporary theorists, however, have landed on the one-dimensional exhaustion frame for burnout. A two-dimensional job burnout framework proposed by Demerouti, Bakker, Varda-

kou, and Kantas (2003) focuses on exhaustion and disengagement (i.e., distancing oneself from work and negative attitude toward the work-related objects and tasks). Demerouti et al. (2003) proposed a relatively broad conceptualization of burnout, defined as long-term consequences of prolonged exposure to job demands. Obviously, there is a potential overlap between cynicism and negative attitude toward work bringing this approach closer to that of Maslach et al. (2001).

The variety of conceptualizations and operationalizations of the job burnout construct raises many concerns. Scientific advancement relies on agreed on definitions and measurement. In the case of job burnout, there appears to be consensus only related to the exhaustion component. Our meta-analytic review, including moderator analyses, provides critical information to clarify some of these conceptual challenges. The area of STS also falls victim to construct definition confusion.

### Secondary Traumatic Stress

In the present study, we use the umbrella term *secondary traumatic stress* to discuss such effects of secondary exposure as secondary PTSD (Bride et al., 2004), vicarious traumatization (McCann & Pearlman, 1990), and the STS aspect of compassion fatigue (Figley, 2002).

STS (also called secondary PTSD) is usually conceptualized as reactions resembling PTSD, and thus includes symptoms that are parallel to those observed in people directly exposed to trauma (Bride et al., 2004). There are three clusters of symptoms: intrusive reexperiencing of the traumatic material, avoidance of trauma triggers and emotions, and increased physical arousal (Bride et al., 2004). These consequences are assumed to result from indirect exposure to trauma among human services providers whose clients or patients suffered from primary exposure.

The concept of vicarious trauma focuses on cognitive effects of indirect exposure (Pearlman, 1996). A negative shift in worldview occurs as a result of an empathetic engagement with clients' or patients' traumatic material (Pearlman, 1996). The symptoms of vicarious trauma include disturbances in the professional's cognitions in five areas (i.e., safety, trust, esteem, intimacy, and control), in reference to oneself and others (Pearlman & Saakvitne, 1995).

Another theoretical framework uses the term *compassion fatigue* to explain the consequences of secondary exposure to trauma at work (Figley & Kleber, 1995). Compassion fatigue is defined as a reduced empathic capacity or client interest manifested through behavioral and emotional reactions from exposure to traumatizing experiences of others (R. E. Adams et al., 2006). Initially, the broad definition of compassion fatigue (Figley & Kleber, 1995) focused on any emotional duress experienced by persons having close contact with a trauma survivor. More recently, aspects of burnout were additionally incorporated into the compassion fatigue concept capturing the element of energy depletion (Stamm, 2010).

Of import, the definition of job burnout included in compassion fatigue differs from the more common approaches reviewed earlier that focus more on exhaustion (e.g., Demerouti et al., 2003; Maslach et al., 2001). Within the compassion fatigue framework, burnout is described as being "associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively" (Stamm, 2010, p. 13). It is not completely clear

whether the resulting construct of compassion fatigue is unitary or composed of two distinct dimensions (Figley & Stamm, 1996; Jenkins & Baird, 2002), although some evidence has suggested a two-dimension structure (R. E. Adams et al., 2006). Compassion fatigue is measured with the Professional Quality of Life (ProQOL; Stamm, 2010). Compared to other job burnout scales, the burnout items of the ProQOL are not focused on exhaustion symptoms, but, instead, refer to lack of well-being, negative attitudes toward work, work overload, or a lack of self-acceptance.

Burnout and other consequences of secondary exposure to trauma (e.g., secondary PTSD and compassion fatigue) should be moderately related, because their theoretical frameworks each have a different emphasis. Besides exposure to clients' reports of their traumatic experience, burnout is related to workplace structural strains and chronic organizational issues (Lee, Lim, Yang, & Lee, 2011). PTSD-like symptoms of secondary PTSD and vicarious traumatization are conceptually linked only to those workplace factors that refer to indirect exposure to trauma content (Jenkins & Baird, 2002; Schauben & Frazier, 1995). In contrast, compassion fatigue refers to a broad range of emotional or cognitive consequences of secondary exposure. We believe that differences in defining and measuring the effects of indirect traumatization may be crucial for testing the relationship between job burnout and other consequences of secondary exposure to trauma.

Collectively, the research on burnout and negative consequences related to secondary exposure to trauma suffers from definitional and measurement challenges. Understanding possible moderators, such as culture and gender, may offer important insights.

### The Role of Culture, Gender, and the Type of Work-Related Exposure to Trauma

Professionals from different countries performing the same job may differ in job burnout. For example, Japanese nurses reported lower levels of personal accomplishment and higher levels of emotional exhaustion and depersonalization compared to nurses from the United States, Canada, the United Kingdom, Germany, and New Zealand, with Russian and Armenian nurses reporting the lowest levels of job burnout (Poghosyan, Aiken, & Sloane, 2009). A European study showed that the highest percentages of family doctors with job burnout were identified in the United Kingdom, Italy, and Greece (Soler et al., 2008). Professionals from Fiji or Brazil may suffer from higher levels of job burnout than professionals in Israel, France, Germany, or China (Perrewé et al., 2002).

The concepts of job burnout and compassion fatigue were developed in the United States, and a large proportion of studies investigating the associations between these constructs were conducted in North America. However, a growing number of studies have discussed data collected in other countries (Thoresen, Tønnessen, Lindgaard, Andreassen, & Weisæth, 2009). Trauma researchers have suggested that culture is a critical factor to consider (Marshall & Suh, 2003). The sociocultural context may determine the outcomes of exposure in several ways, such as shaping emotional experiences and emotional processing (Bracken, 2001; Marshall & Suh, 2003). Furthermore, critical determinants of developing the consequences of secondary exposure to trauma, such as existing policies, social resources, and organizational characteristics (Voss Horrell, Holohan, Didion, & Vance, 2011), are likely to vary across countries. Thus, our research investigated the moder-

ating role of cultural context (defined as the country of data collection) in the relationship between burnout and other consequences of indirect trauma exposure.

Gender is also important to consider. Female professionals are likely to report higher levels of aspects of burnout referring to the depletion of emotional reserves (Watts & Robertson, 2011) or higher levels of compassion fatigue (Sprang, Clark, & Whitt-Woosley, 2007). The associations between gender and PTSD-like symptoms among professionals with secondary exposure are unclear (Sprang, Craig, & Clark, 2011). Furthermore, the effects of gender on burnout may be higher in the United States than in European countries, where there are smaller reported differences in burnout levels among men and women (Purvanova & Muros, 2010). It remains unknown, however, whether gender may moderate the associations between job burnout and STS.

Some occupations are characterized by a low likelihood of direct exposure to work-related trauma (e.g., therapists), in contrast to professionals who work at the epicenter of trauma (e.g., paramedics, rescue workers) and thus may be also directly exposed (Argentero & Setti, 2011; Halpern, Maunder, Schwartz, & Gurevich, 2011). Being a member of an occupational group with an increased likelihood of both direct and indirect exposure to work-related trauma may be an important determinant of STS and burnout (Palm, Polusny, & Follette, 2004). The present study investigated the moderating effect of the type of work-related trauma exposure, with the type of occupation as the indicator of the exposure.

### Aims

Although research evidence for the relationships between job burnout and other consequences of indirect trauma exposure (i.e., PTSD-like symptoms, compassion fatigue, vicarious traumatization) among workers exposed to secondary trauma is accumulating, the overarching synthesis of these relationships is missing. Systematic review and meta-analytic strategies offer an option for evaluating the available literature. This study aimed at systematically reviewing and meta-analyzing the strength of associations between job burnout and other psychosocial consequences of work-related indirect exposure to trauma in professionals working with trauma survivors. It was hypothesized that these associations may be moderated by: (a) the type of measurement, (b) the conceptualization of job burnout and STS, (c) gender, and (d) the types of occupations involving primary and secondary exposure, compared to types of occupations involving only secondary exposure. To evaluate cultural context, we explored differences between the findings obtained in the United States and other countries, as well as the differences in findings obtained for English-language measures versus other-language measures.

### Method

#### Literature Search

A systematic database search of studies on STS and job burnout was conducted for independent studies available before 2012. The search included the following databases: PILOTS, ScienceDirect, Scopus, and Web of Knowledge. Combinations of the keywords related to *job burnout* (*burnout* or *burn-out*) and *secondary trauma*

matic stress (*trauma\**, *posttrauma\**) were used, with asterisks indicating that a keyword may consist of the stem and any suffix (e.g., *traumatic*). To ensure that various concepts and terms referring to STS were included, we also used such keywords as *compassion fatigue* and *PTSD*. Manual searches of the reference lists were conducted. If the original article did not provide all details essential for meta-analyses (e.g., reliability, correlation coefficients), the authors of original studies were asked to provide respective information. To minimize a possible bias, at least two of the authors (K. S., R. C., A. D., or E. M.) were involved at all stages of data extraction, coding, synthesis, and analysis. The Cochrane systematic review methods were applied (Higgins & Green, 2008).

### Inclusion Criteria, Exclusion Criteria, and Data Abstraction

The following inclusion criteria were implemented: (a) STS and job burnout were measured at some time point in the original study; (b) the relationship between STS and job burnout was assessed, or authors provided appropriate statistics on request; (c) articles reported statistics that could be converted into Pearson's coefficient (e.g., *t* test, *F* test,  $\chi^2$ , *z* test); (d) original studies enrolled workers performing job tasks involving contact with traumatized clients/patients or traumatic material. English-language publication restriction was applied (although the measurement itself could be in a non-English language). Dissertations and book chapters were excluded. Studies applying qualitative methods, narrative reviews, and research on nonworkers (e.g., student samples) were excluded. When two or more studies used the same sample, only one publication was included. Details of the selection process are presented in Figure 1. The initial search resulted in 337 articles. The selection processes resulted in 45 studies meeting all inclusion criteria. However, four of those studies were excluded from further analysis, because they were identified as outliers, with *z* scores greater than 10 or less than -10 (Alkema, Linton, & Davies, 2008; Backholm & Björkqvist, 2010; Lauvrud, Nonstad, & Palmstierna, 2009; Maunder et al., 2006). Thus, 41 original studies were analyzed (see Table 1).

Descriptive data (including country where a study was conducted, sample size, participants' gender and occupations, measurement, and design) were extracted and verified by two of the authors. Relevant statistics, including reliability coefficient, and measures of association (or statistics allowing for computing these associations) were also retrieved. Any disagreement in the processes of data extraction was resolved by a consensus method.

### Coding

Two main categories of negative consequences of secondary exposure to trauma were analyzed. The first main category, called STS, was defined as negative emotional or cognitive consequences of indirect exposure to trauma, such as (a) PTSD-like symptoms measured by the Secondary Trauma Stress Scale (Bride et al., 2004), the Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979), or the Impact of Event Scale-Revised (Weiss & Marmar, 1997); (b) vicarious trauma—a cognitive shift in worldview, defined by Pearlman (1996) and measured by the Traumatic Stress

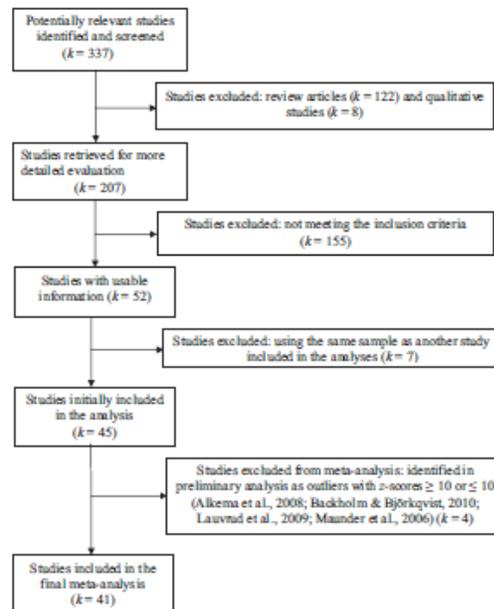


Figure 1. Selection of studies for the meta-analysis.

Institute Belief Scale (Pearlman, 1996); or (c) an aspect of compassion fatigue, defined by Figley and coworkers (e.g., Figley & Stamm, 1996) and measured by the Secondary Traumatic Stress subscale of the ProQOL (Stamm, 2000), the Compassion Satisfaction and Fatigue Test (CSFT; cf. Figley & Stamm, 1996), the Compassion Fatigue Questionnaire (CFQ; Figley & Kleber, 1995), or the Compassion Fatigue Scale-Revised (CFS-R; R. E. Adams et al., 2006).

Job burnout, the second key category analyzed, was defined as consequences of work related-stress focusing on: (a) the emotional exhaustion component of job burnout, as measured by the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1997), the Oldenburg Burnout Inventory (OLBI; Halbesleben & Demerouti, 2005), the Rescue Worker Burnout Questionnaire (Musa & Hamid, 2008), the Burnout Measure (Malach-Pines, 2005), or the Copenhagen Burnout Inventory (Kristensen et al., 2005); or (b) a concept derived from the compassion fatigue framework and broadly defined by Figley and coworkers (e.g., Figley & Stamm, 1996) as referring to lack of well-being, negative attitudes toward work, work overload, or a lack of self-acceptance, measured by the Job Burnout subscales of the ProQOL (Stamm, 2010), the CSFT (cf. Figley & Stamm, 1996), the CFQ (Figley & Kleber, 1995), or the CFS-R (R. E. Adams et al., 2006).

The moderating factors, referring to the measurement, theoretical framework, cultural factors (i.e., country, language), and gender, were combined into the following categories: (a) the type of measurement used for STS assessment (measures of cognitive shift or PTSD-like symptoms vs. measures of compassion fatigue); (b) the type of assessment of job burnout (the ProQOL Burnout

**Table 1**  
*Summary of the Studies Included in the Meta-Analysis*

Study (first author, publication year)	N (% men)	Occupation	Study design	STS measure ( $\alpha$ )	Job burnout measure ( $\alpha$ )	Country	r
K. B. Adams (2001)	185 (18)	Clinical social workers	Cross-sectional	TSI Belief Scale (.93)	MBI (.75, .78, .90)	United States	.494
R. E. Adams (2006)	236 (20)	Social workers	Cross-sectional	CFS-R (.80)	CFS-R (.90)	United States	.642
Argentero (2011)	781* (58)	Rescue workers	Cross-sectional	STSS (.82)	MBI (.75, .81, .86)	Italy	.751*
Ben-Porat (2011)	214* (15)	Social workers	Cross-sectional	STSS (.88)*	Burnout Measure (.92)*	Israel	.878*
Berger (2011)	80 (0)	Well baby clinic nurses	Longitudinal	ProQOL (.77-.79)	ProQOL (.77-.79)	Israel	.505*
Birck (2002)	25 (40)	Professionals at treatment center for torture victims	Cross-sectional	CSFT (.87-.90)	CSFT (.87-.90)	Germany	.881
Burtson (2010)	126 (12)	Nurses	Cross-sectional	ProQOL (.81)	ProQOL (.75)	United States	.795
Carmel (2009)	106 (47)	Therapists	Cross-sectional	ProQOL (.81)	ProQOL (.79)	United States	.825
Chang (2011)	102 (100)	Soldiers	Cross-sectional	ProQOL (.68)	ProQOL (.65)	China	.827
Circenis (2011)	129 (NA)	Nurses	Cross-sectional	ProQOL (.81) <sup>b</sup>	MBI (.71, .79, .90) <sup>b</sup>	Latvia	.719
Cohen (2006)	37 (NA)	Social workers	Cross-sectional	CFQ (.80)	CFQ (.84)	Israel	.720
Collins (2003)	13 (46)	Health care workers	Longitudinal	CSFT (.80)	CSFT (.86)	Ireland	.941
Conrad (2006)	355* (10)	Child protection workers	Cross-sectional	CSFT (.84)	CSFT (.84)	United States	.842*
Craig (2010)	532 (34)	Trauma therapists	Cross-sectional	ProQOL (.81)	ProQOL (.73)	United States	.663
Devilly (2009)	150 (29)	Mental health professionals	Cross-sectional	STSS (.93)	CBI (.85, .86, .87)	Australia	.625
Eastwood (2008)	57 (25)	Childcare workers	Cross-sectional	ProQOL (.80)	ProQOL (.72)	United States	.771
Flannelly (2005)	149 (54)	Chaplains	Cross-sectional	ProQOL (.87)	ProQOL (.83)	United States	.777
Galek (2011)	331 (55)	Chaplains	Cross-sectional	CSFT (.83)	CSFT (.85)	Canada, United States	.190
Gibbons (2011)	62 (NA)	Social workers	Cross-sectional	ProQOL (.81) <sup>b</sup>	ProQOL (.75) <sup>b</sup>	England	.616
Halpern (2011)	189 (62)	Ambulance workers	Cross-sectional	IES-R (.91)	MBI (.83)*	Canada	.454*
Hatcher (2010)	50 (29)	Clinicians for sexual offenders	Cross-sectional	ProQOL (.81) <sup>b</sup>	ProQOL (.75) <sup>b</sup>	Australia	.648*
Jenkins (2002)	99 (4)	Counselors	Cross-sectional	CSFT (.84)	MBI (.81, .91, .92)	United States	.435
Kadambi (2004)	211 (16)	Therapists	Cross-sectional	IES (.88) <sup>b</sup>	MBI (.71, .79, .90) <sup>b</sup>	Canada, United States	.326
Killian (2008)	104 (21)	Therapists	Cross-sectional	ProQOL (.86)*	MBI (.88)*	United States	.690*
Kraus (2005)	90 (43)	Mental health professionals	Cross-sectional	CSFT (.85)	CSFT (.80)	United States	.788
LaFauci Schutt (2011)	184 (65)	Emergency management professionals	Cross-sectional	PCL-C (.94)	ProQOL (.73)	United States	.676
Lawson (2011)	506 (21)	Counselors	Cross-sectional	ProQOL (.80)	ProQOL (.78)	United States	.776*
Meadors (2009-2010)	167 (14)	Pediatric health care providers	Cross-sectional	STSS (.91)	ProQOL (.66)	United States	.813
Mitani (2006)	243 (97)	Firefighters	Cross-sectional	IES-R (.94) <sup>b</sup>	MBI (.81, .85, .87) <sup>b</sup>	Japan	.396
Musa (2008)	53 (49)	Aid workers	Cross-sectional	ProQOL (.87)	RWBQ (.73)	Sudan	.602
Perez (2010)	28 (75)	Law enforcement investigators	Cross-sectional	STSS (.97)	MBI (.69, .85, .90)	United States	.745
Perron (2006)	59 (10)	Forensic interviewers	Cross-sectional	STSS (.93) <sup>b</sup>	OLBI (.80) <sup>b</sup>	United States	.643
Pietrantonio (2008)	961 (72)	First responders	Cross-sectional	ProQOL (.80)	ProQOL (.86)	Italy	.687
Potter (2010)	154 (NA)	Oncology health care providers	Cross-sectional	ProQOL (.80)	ProQOL (.72)	United States	.741*
Prati (2010)	569 (78)	Rescue workers	Cross-sectional	ProQOL (.71)	ProQOL (.80)	Italy	.638
Robins (2009)	314 (18)	Child health care providers	Cross-sectional	CSFT (.84-.90)	CSFT (.84-.90)	United States	.756
Severn (2012)	82 (NA)	Audiologists	Cross-sectional	ProQOL (.81)	ProQOL (.69)	New Zealand	.831
Simon (2005)	21 (5)	Oncology social workers	Cross-sectional	CSFT (.87)	CSFT (.90)	United States	.531
van der Ploeg et al. (2003)	84 (68)	Forensic doctors	Cross-sectional	IES (.92)	MBI (.79, .80, .86)	Netherlands	.256
van der Ploeg & Kleber (2003)	123 (86)	Ambulance personnel	Longitudinal	IES (.92)	MBI (.70, .76, .86)	Netherlands	.323
Weiniger (2006)	185* (79)	Surgical physicians	Cross-sectional	PSS-SR (.68)*	MBI (.36, .44, .72)*	Israel	.623*

*Note.* STS = secondary traumatic stress; CFS-R = Compassion Fatigue Scale-Revised; TSI Belief Scale = Traumatic Stress Institute Belief Scale; MBI = Maslach Burnout Inventory; STSS = Secondary Traumatic Stress Scale; ProQOL = Professional Quality of Life Scale; CSFT = Compassion Satisfaction and Fatigue Test; NA = not available; CFQ = Compassion Fatigue Questionnaire; CBI = Copenhagen Burnout Inventory; IES-R = Impact of Event Scale-Revised; IES = Impact of Event Scale; RWBQ = Rescue Worker Burnout Questionnaire; OLBI = Oldenburg Burnout Inventory; PCL-C = Posttraumatic Stress Disorder Checklist-Civilian Version; PSS-SR = PTSD Symptom Scale-Self-Report.

\* Information not reported in articles, but provided on the authors' request. <sup>b</sup> Information not reported in articles, therefore, drawn from another study.

subscale vs. other job burnout instruments, such as the MBI and the OLBI, which have clearly defined emotional exhaustion as a key component); (c) the theoretical framework (the compassion fatigue approach vs. other approaches to job burnout and STS), (d) the country where the study was conducted (the United States vs. other countries), (e) the continent where the study was conducted (North America vs. others), (f) the measurement language (English

or others), (g) gender (predominantly male sample consisting of at least 75% men vs. predominantly female sample consisting of at least 75% women), (h) occupations with higher likelihood of both direct and indirect work-related exposure (rescue/emergency workers, nurses, social workers working with victims of missile attacks, chaplains working with victims of September 11, ambulance workers, pediatric care workers, firefighters, interna-

tional aid workers, first responders, forensic doctors, and surgical physicians) and occupations that may involve only indirect work-related trauma exposure (therapists, child protection workers, child care workers, chaplains, social workers, law enforcement exposed to disturbing media images, and forensic interviewers of abused children). In some cases, the same occupation groups (social workers and chaplains) were classified into different categories, depending on professional tasks described in original studies.

### Data Analysis

The statistical analysis followed the procedure described by Hunter and Schmidt (2004). Attenuation due to the measurement error was corrected. The cumulative effect size was computed using the random-effect model method (Field & Gillett, 2010). The overall effect sizes, heterogeneity, and effect of the moderators (i.e., measurement, theoretical framework, country/continent, language, and gender) on the relationship between STS and job burnout were examined using Comprehensive Meta-Analysis software (Borenstein, Hedges, Higgins, & Rothstein, 2005). All analyses were sufficiently powered (above .80).

Pearson's correlation was used as the effect size indicator. When the original study provided multiple Pearson's correlations between STS and job burnout (e.g., for separate subscales), a mean Pearson's correlation was calculated (Hunter & Schmidt, 2004). When several measures of STS were applied in the original study, a measure other than a ProQOL subscale was used to estimate Pearson's coefficient for STS–job burnout association. The direction of a correlation involving the MBI Personal Accomplishment subscale was reversed to create positive associations between these subscales. If the original study provided alphas for subscales only, a mean Cronbach's alpha for a total score was calculated. When no Cronbach's alpha was available, it was obtained from original psychometric studies. Robustness of the calculated effect size against the effect of unpublished null results was assessed using the fail-safe *N* test (Rosenthal, 1979). To address this file drawer problem, the number of unpublished studies that were necessary to produce a nonsignificant result was calculated.

## Results

### Description of Analyzed Material

Table 1 displays information about samples, procedures, and measurement applied in 41 original studies. Overall, data from 8,256 workers were analyzed. Sample sizes varied from 13 to 961 participants, with an average of 198.63 ( $SD = 205.48$ ) and median of 129. The average sample consisted of 59.03% women ( $SD = 28.35$ ), with a majority of studies (82.93%;  $k = 34$ ) targeting mixed-gender samples. Only two studies were homogeneous in terms of gender ( $k = 1$ , 100% male participants;  $k = 1$ , 100% female participants). Gender frequencies were missing in five studies. Data were collected in various professional groups such as therapists, mental health professionals (including social workers), and counselors (36.58%;  $k = 15$ ); emergency, ambulance, or rescue workers (12.20%;  $k = 5$ ); child care workers and child health care providers (9.76%;  $k = 4$ ); nurses (7.32%;  $k = 3$ );

forensic specialists (4.88%;  $k = 2$ ); chaplains (4.88%;  $k = 2$ ); and other noncategorized professionals (24.39%;  $k = 10$ ).

Almost half (46.34%;  $k = 19$ ) of the original research was conducted in the United States; 22 studies (53.66%) took place in North America. Four studies (9.76%) were conducted in Israel, three in Italy (7.32%), two in Australia (4.88%), and two in the Netherlands (4.88%). There were also two multicountry studies (4.88%) conducted both in Canada and the United States. Three studies (7.32%) took place in Africa or Asia. An English-language version of the questionnaires was applied in 65.85% ( $k = 27$ ) of the studies.

The most popular measures used to assess STS stem from the compassion fatigue framework (Figley & Stamm, 1996). These ProQOL-related measures were used in 65.85% of studies ( $k = 27$ ) and among 5,343 respondents (64.72% of the total sample). The most popular questionnaires used to assess job burnout also stem from the compassion fatigue approach to job burnout (i.e., ProQOL-related measures). They were applied in 60.98% of studies ( $k = 25$ ), with 5,409 (65.51% of the total sample) professionals completing respective measures. Overall, ProQOL was used in 34.15% of studies ( $k = 14$ ) to assess both STS and burnout constructs.

### Associations Between STS and Job Burnout

The main research question dealt with the associations between STS and job burnout. The meta-analysis results conducted from 41 original studies indicated that the average association between these two variables was positive and the effect size was large (weighted  $r = .69$ ; see Table 2). The coefficient of determination ( $r^2$ ) was .48. The analysis of the fail-safe *N* showed that 10,603 studies with null results were needed to produce a nonsignificant association between STS and job burnout. The following analyses tested the moderating role of the measurement, the theoretical framework, the country, the continent, the language of data collection, gender of professionals taking part in the studies, and the type of occupation (likely to be directly and indirectly exposed to work compared to those who are likely to be only indirectly exposed at work).

**Measurement of STS as the moderator.** The original captured studies were divided into two categories on the basis of the type of measurement used to assess STS: (a) PTSD-like symptoms or (b) a measurement referring to compassion fatigue, based on a broader conceptualization of STS proposed by Figley and colleagues (cf. Figley & Stamm, 1996; R. E. Adams et al., 2006). The results of the moderator analysis showed that the effect sizes of the relationship between STS and job burnout were dependent on the type of STS assessment, with ProQOL-related measures having a stronger association ( $r^2 = .53$ ) than measures assessing PTSD-like symptoms ( $r^2 = .37$ ; see Table 2).

**Measurement of job burnout as the moderator.** The original studies were divided into two categories on the basis of the type of job burnout measurement used in the studies: (a) the measures stressing the role of exhaustion and (b) the subscales of ProQOL and related measures, based on a broader burnout concept, proposed by Figley and coworkers (cf. Figley & Stamm, 1996). The results showed that the relationship between STS and job burnout was moderated by the type of job burnout assessment, with ProQOL-related measures producing a significantly stronger

**Table 2**  
*Results of Meta-Analysis of the Relationship Between Job Burnout and Secondary Traumatic Stress: Overall and Moderator Effects*

Measures	<i>r</i> <sup>a</sup>	<i>r</i> range <sup>b</sup>	<i>r</i> 95% CI <sup>c</sup>	<i>N</i>	<i>k</i> <sup>d</sup>	<i>Q</i> <sup>e</sup>	<i>I</i> <sup>2</sup> (%) <sup>f</sup>	Fail-safe <i>N</i> <sup>g</sup>	<i>t</i> <sup>h</sup>
Overall effect	.691	.252–.941	[.647, .731]	8,256	41	478.49*	91.64	10,603	—
Moderator effects									
Measurement									
STS measure									39.96**
ProQOL or related	.729	.435–.941	[.693, .762]	5,343	27	153.94*	83.11	14,138	
STS as PTSD-like symptoms	.608	.252–.878	[.483, .709]	2,913	14	287.43*	95.48	4,829	
Job burnout measure									52.33**
ProQOL-related vs. other measures									
ProQOL or related	.744	.505–.941	[.710, .775]	5,409	25	142.39*	83.15	14,163	
Other	.589	.252–.878	[.471, .687]	2,847	16	273.58*	94.52	4,817	
ProQOL-related vs. MBI									70.81**
ProQOL or related	.744	.505–.941	[.710, .775]	5,409	25	142.39*	83.15	14,163	
MBI	.532	.252–.751	[.397, .645]	2,371	12	177.69*	93.81	2,358	
ProQOL-related vs. other burnout measures (excluding MBI or ProQOL-related)									3.18*
ProQOL or related	.744	.505–.941	[.710, .775]	5,409	25	142.39*	83.15	14,163	
Other burnout measures (excluding MBI)	.731	.602–.878	[.527, .856]	476	4	37.68*	92.04	431	
MBI vs. other burnout measures (excluding MBI or ProQOL-related)									22.01**
MBI	.532	.252–.751	[.397, .645]	2,371	12	177.69*	93.81	2,358	
Other burnout measures (excluding MBI or ProQOL-related)	.731	.602–.878	[.527, .856]	476	4	37.68*	92.04	431	
Framework applied									
Compassion fatigue vs. other approaches									51.18**
Only compassion fatigue framework	.744	.505–.941	[.707, .776]	4,958	23	132.03*	83.34	9,879	
No measure from the compassion fatigue framework	.578	.252–.878	[.426, .699]	2,462	12	261.60*	95.80	3,029	
Compassion fatigue vs. mixed approach									44.69**
Only compassion fatigue framework	.744	.505–.941	[.707, .776]	4,958	23	132.03*	83.34	9,879	
At least one measure from other framework	.612	.252–.878	[.509, .697]	3,298	18	299.43*	94.32	7,033	
Cultural factors									
Country									18.00**
United States	.725	.435–.842	[.678, .767]	3,572	19	129.17*	86.07	2,698	
Other countries	.675	.256–.941	[.604, .736]	4,132	20	245.87*	92.27	10,483	
Continent									3.79**
North America (United States and Canada)	.697	.252–.842	[.636, .748]	4,313	22	252.03*	91.67	5,846	
Countries from other continents	.685	.256–.941	[.615, .745]	3,943	19	224.18*	91.97	9,797	
Language of applied measures									14.22**
English	.706	.252–.941	[.653, .752]	4,670	27	269.56*	90.36	10,994	
Other	.662	.256–.881	[.574, .735]	3,586	14	204.82*	93.65	6,395	
Gender									14.58**
Primarily male (at least 75% of males)	.608	.256–.827	[.448, .729]	1,211	6	60.63*	91.75	731	
Primarily female (at least 75% of females)	.692	.252–.878	[.594, .769]	2,744	15	256.61*	94.54	7,205	
Occupations									18.27**
With high likelihood of secondary exposure only	.719	.252–.941	[.652, .775]	3,526	22	271.20*	92.26	2,787	
With high likelihood of both primary exposure and secondary exposure	.662	.256–.827	[.601, .715]	4,730	19	198.42*	90.93	2,496	

*Note.* CI = confidence interval; STS = secondary traumatic stress; ProQOL = Professional Quality of Life Scale; PTSD = posttraumatic stress disorder; MBI = Maslach Burnout Inventory.

<sup>a</sup> Weighted effect size. <sup>b</sup> Range of effect sizes. <sup>c</sup> Critical intervals for the weighted effect size. <sup>d</sup> Number of studies. <sup>e</sup> A significant *Q* value indicates that the data are heterogeneous, suggesting that the variability among studies was not due to sampling error. <sup>f</sup> Value indicates the percentage of variance due to heterogeneity among studies. <sup>g</sup> Value indicates the number of studies with null results that are necessary to overturn the results of meta-analysis and to conclude that the results are due to sampling bias. <sup>h</sup> Test for moderating effect.

\* *p* < .01. \*\* *p* < .001.

associations ( $r^2 = .55$ ) than any other measures of burnout ( $r^2$  range: .28–.53; see Table 2).

Next, we investigated the relationship between STS and three components of job burnout measured with MBI: emotional exhaustion, depersonalization/cynicism, and lack of professional/personal accomplishments (Maslach et al., 2001). Results indicated that the effect size of the relationship between STS and a lack of accomplishment was relatively smaller than the other two effect sizes. In particular, the correlation of STS with emotional

exhaustion (weighted  $r = .55$ ,  $r^2 = .30$ ,  $N = 2,361$ ,  $k = 12$ ) was stronger than the associations with depersonalization,  $r = .51$ ,  $r^2 = .26$ ,  $N = 1,939$ ,  $k = 9$ ,  $t(4298) = 11.29$ ,  $p < .001$ , or lack of accomplishment, weighted  $r = .35$ ,  $r^2 = .12$ ,  $N = 2,158$ ,  $k = 10$ ,  $t(4427) = 41.13$ ,  $p < .001$ .

**The theoretical framework as the moderator.** We tested whether the associations between STS and job burnout differed depending on the use of the compassion fatigue framework (Figley & Stamm, 1996; Stamm, 2010). In particular, associations ob-

tained in studies in which both STS and job burnout were operationalized in line with the compassion fatigue framework (with ProQOL or ProQOL-related measures applied) were compared to the associations found in studies in which STS and job burnout were operationalized in line with other approaches (see Table 2). These other approaches defined STS as PTSD-like symptoms or vicarious trauma. They defined burnout, focusing on the exhaustion component, as the consequence of work related-stress (cf. Maslach et al., 2001). The results of the moderator analysis indicated that the relationship between STS and job burnout was moderated by the type of theoretical framework (see Table 2). For STS, job burnout associations were significantly stronger when both constructs were assessed with the ProQOL or ProQOL-related measures ( $r^2 = .55$ ) compared to the associations observed in studies applying measures derived from other approaches ( $r^2 = .34$ ).

**Culture and gender as moderators.** The next set of analyses compared: (a) the results obtained in the United States with results found in other countries, and (b) the associations found in studies using English versions of STS and job burnout instruments with the associations found in research using different language versions. Other than the United States, with 19 studies, fewer than 10% of studies were conducted in one country (e.g., four studies in Israel). Therefore, other between-country comparisons were not conducted. The results showed that cultural and language factors moderated the relationship between STS and job burnout (see Table 2). The associations observed for data collected in the United States were significantly stronger ( $r^2 = .52$ ) compared to the relationships found in the studies from other countries ( $r^2 = .45$ ). Similarly, significant differences were found when the associations observed in North America were compared to results obtained on other continents ( $r^2 = .49$  and  $r^2 = .48$ , respectively; see Table 2). Furthermore, the associations found for the English-language versions of measures were significantly stronger ( $r^2 = .50$ ) than the relationships obtained in the studies using other language versions ( $r^2 = .44$ ). Finally, the results indicated that gender might moderate the relationship between STS and job burnout, with stronger associations observed in predominantly female samples ( $r^2 = .48$ ) compared to predominantly male samples ( $r^2 = .37$ ; see Table 2).

**Type of occupation in the context of work-related exposure to trauma.** Results obtained in original studies involving occupations with an increased likelihood for both direct and indirect exposure were compared to those in which only indirect exposure was likely to occur. The analysis indicated that type of occupation moderated the relationship between STS and job burnout (see Table 2). The associations were stronger in samples with occupations with only secondary exposure ( $r^2 = .52$ ) compared to samples with occupations characterized by high likelihood for both primary and secondary exposure ( $r^2 = .44$ ).

## Discussion

Our meta-analysis investigated the relationship between STS and job burnout among employees indirectly exposed to trauma. The indirect exposure could be due to contact with clients or patients who have experienced traumatic events or due to an exposure to other traumatic materials. High levels of burnout and other consequences of indirect exposure to trauma are likely to be elevated among mental health care providers (Newell & MacNeil, 2011) and to affect professionals' well-being, quality of life of

their patients, and the effectiveness of caring (Cheung & Chow, 2011). The present study adds to existing literature by indicating the coexistence of STS and job burnout among professionals exposed indirectly to trauma in their work. The meta-analysis of 41 studies suggests that the association between these two constructs is high, and that these two concepts may share as much as 48% of the variance.

Recently developed frameworks, providing an overview of risk factors for developing negative consequences of working with traumatized patients or clients (Voss Horrell et al., 2011), have assumed that compassion fatigue, burnout, vicarious trauma, and STS constitute a rather homogenous group of psychosocial consequences of secondary exposure. Voss Horrell et al. (2011) suggested that developing this relatively homogenous group of consequences depends on shared risk factors. In other words, it may be assumed that the same risk factors referring to patient, professional, or organizational characteristics would increase the probability of developing compassion fatigue, as well as burnout, vicarious trauma, and PTSD-like symptoms. Strong associations found in our meta-analysis might result from these common risk factors. Further, the effects of indirect exposure to trauma may also be mitigated by cultural and individual resilience factors, such as hardiness or self-efficacy (cf. Luszczynska, Benight, & Cieslak, 2009). Future studies need to investigate the common and specific risk and resilience factors, explaining development of compassion fatigue, burnout, and secondary PTSD.

Research applying constructs and measurement derived from a single theoretical framework is often considered as "the state-of-the-art" approach. By contrast, "covering the bases" by means of amalgamation of several theoretical frameworks is usually assumed as an inferior approach, forcing new relationships on variables from otherwise independent models and creating some redundancy (Figueroa, Kincaid, Rani, & Lewis, 2002). Thus, applying measurement from the same approach, such as compassion fatigue (R. E. Adams et al., 2006; Figley & Stamm, 1996), could be considered as a superior approach to testing the STS–burnout relationship, compared to combining assessment methods from distinct frameworks.

The results of the present study suggest, however, that the application of the compassion fatigue approach to measuring consequences of secondary exposure among professionals has some undesirable consequences. The results of respective moderator analysis indicate that if both STS and job burnout are measured within the compassion fatigue approach (i.e., by means of the ProQOL and related measures), the proportion of shared variance is significantly larger than if the measures are derived from any of the other approaches. If both STS and burnout measures were derived from the compassion fatigue framework, the estimated overlap is 55%, which suggests that STS and burnout constructs might be indistinguishable. The present study does not offer a review of all aspects of STS and burnout theories. Instead, it focused on the operationalization of the key constructs in the STS and burnout frameworks. Therefore, the conclusions are limited to operationalization of the constructs, not entire theories.

Results of our meta-analysis provide arguments for a limited practical utility of applying the ProQOL and ProQOL-related measures when testing for STS and job burnout in one study. Research striving for short measures capturing broader consequences, encompassing symptoms of both STS and burnout, may

want to use one of the subscales of the ProQOL (or ProQOL-related questionnaires), which enables capturing a majority of variance for both constructs.

The results indicate that applying frameworks and measurements different from compassion fatigue (i.e., PTSD-like symptoms, vicarious trauma, or job burnout defined as the focusing on emotional exhaustion consequences of work related-stress) would result in STS and job burnout sharing 34% of variance. In this case, burnout and STS would be related, but measured as sufficiently distinct constructs. This conclusion is in line with earlier research and narrative reviews of literature (Jenkins & Baird, 2002; Sabo, 2011; Thomas & Wilson, 2004).

The results also indicate that a significantly larger overlap between STS and job burnout may be expected if the data are collected in the United States (compared to other countries) and by means of English-language versions of questionnaires (compared to other-language versions). The differences may result from the fact that the translation processes allows for capturing more distinct facets of STS and job burnout. Thus, the translation from English to Hebrew, Dutch, or German may allow for developing refined versions of original methods. Further research needs to investigate the similarities across the language versions in terms of criterion validity and factorial structure. The other source of the between-country differences may result from cultural differences in shaping emotional experiences and emotional processing (Bracken, 2001; Marshall & Suh, 2003) or differences in organizational characteristics, health inequalities, or policies specifying work conditions. Regardless of possible sources of the observed differences, our findings are in line with the assumption that culture is among the key contexts differentiating the effects of secondary exposure among professionals across countries (Marshall & Suh, 2003).

Gender differences in associations between STS and job burnout are in line with previous systematic reviews, suggesting different mechanisms of developing consequences of traumatic stress among men and women (Olf, Langeland, Draijer, & Gersons, 2007). They are also consistent with research that has suggested gender differences in experiencing the depletion of emotional reserves (Watts & Robertson, 2011) or compassion fatigue (Sprang et al., 2007). Further studies should investigate the mechanisms explaining gender inequalities in the likelihood of developing both STS and job burnout among professionals working with trauma survivors.

The results indicating weaker associations between STS and burnout among professionals who are likely to be directly and indirectly exposed to trauma at work, compared to occupations that are likely to involve only indirect exposure, are in line with arguments presented by Palm et al. (2004). Workers exposed to direct trauma at work may be resilient due to better preparedness and training (Palm et al., 2004). Therefore, even if they suffer from one type of consequences of work stress (i.e., burnout), they may not present STS symptoms.

Our research has its limitations. The level of secondary exposure to trauma was not accounted for in our analysis, because several original studies did not assess the exposure. Thus, our results are based on assumptions that the professionals were likely to experience the secondary exposure to trauma, due to the work character and the description of job tasks provided in original studies. Other confounding variables, such as personal history of trauma expo-

sure and other patient characteristics, were also not controlled. Unfortunately, this was not possible, due to the fact that a majority of original research did not account for these factors. Our analyses did not compare service providers who are exposed to trauma indirectly against other human service providers whose level of burnout may result from the strain of caretaking for clients who are not traumatized. Many studies were conducted only once or twice in one country, therefore, a more thorough examination of differences between countries or across language versions was not conducted. Cultural context was defined in a narrow way and referred only to the country of the study and language used in collecting data. It should also be noted that the results should not be generalized to other definitions or frameworks discussing the consequences of secondary work-related exposure to trauma beyond the ones chosen for this review. Finally, the majority of the studies included in the meta-analysis were cross-sectional, therefore no causal associations between STS and job burnout could be investigated.

## Conclusion

Our study provides the first quantitative synthesis of research on the relationships between job burnout and STS among professionals working with traumatized clients. This review shows the moderating effects of theoretical frameworks, type of measures, language, country where data were collected, gender, and type of occupation related to trauma exposure. In general, burnout and STS or compassion fatigue are likely to co-occur among professionals exposed indirectly to trauma through their work. Applications of measures developed within the compassion fatigue framework may result in obtaining stronger relationships between job burnout and STS compared to the use of measures derived from different theoretical frameworks (e.g., the approach to STS focusing on PTSD-like symptoms and the burnout framework focusing on exhaustion component). In particular, STS and burnout constructs may be empirically indistinguishable if measured within the compassion fatigue framework.

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**Appendix 9**  
**Secondary Traumatic Stress Prevalence**

SECONDARY TRAUMATIC STRESS PREVALENCE

1

Secondary Traumatic Stress among Mental Health Providers Working with the Military:  
Prevalence and its Work- and Exposure- Related Correlates

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**Abstract**

The study assessed prevalence and work- and exposure- related correlates of secondary traumatic stress among mental health providers working with military patients. Participants ( $N = 224$ ) completed measures of indirect exposure to trauma (i.e., diversity, volume, frequency, ratio), appraisal of secondary exposure impact, direct exposure to trauma, secondary traumatic stress, and work characteristics. The prevalence of secondary traumatic stress was 19.2%. A meta-analysis showed that the severity of intrusion, avoidance, and arousal symptoms of secondary traumatic stress was similar across various groups of professionals indirectly exposed to trauma (e.g., mental health providers, rescue workers, social workers). A high percentage of traumatized clients in one's professional career (i.e., ratio of indirect exposure) and the negative appraisal of the indirect trauma exposure impact were related to higher secondary traumatic stress. Additionally, personal history of trauma, constraints related to patient load, and high levels of paperwork were associated with higher secondary traumatic stress.

*Keywords:* secondary traumatic stress; indirect exposure to trauma; mental health providers; military trauma

## Secondary Traumatic Stress among Mental Health Providers Working with the Military:

## Prevalence and its Work- and Exposure- Related Correlates

**INTRODUCTION**

The rates of Posttraumatic Stress Disorder (PTSD) among the U.S. military and veterans across studies range from a current prevalence of 2% to 17% to a lifetime prevalence from 6% to 31% (Richardson, Frueh, & Acierno, 2010). These rates are higher than in the general U.S. population where the current prevalence is 3.5% (Kessler, Chiu, Demler, Merikangas, & Walters, 2005) and lifetime prevalence is 6.8% (Kessler, Berglund, et al., 2005). The numbers of military or veteran patients seeking mental health care has grown drastically in recent years. The Department of Veterans Affairs (VA) alone has observed a 200% increase in the number of patients with PTSD receiving behavioral health services, from 139,062 in 1997 to 279,256 in 2005 (Rosenheck & Fontana, 2007). With a growing need for treatment, the VA alone added 4,330 mental health professionals to its workforce (Voss Horrell, Holohan, Didion, & Vance, 2011). These statistics show the population affected indirectly by trauma, through providing services for traumatized patients, is growing rapidly. Given the exponential increase in clinical need and potential for secondary exposure by military mental health providers, the purpose of this investigation was threefold: (a) explore the prevalence of secondary traumatic stress among mental health providers working with military patients and compare the severity of secondary traumatic stress symptoms in this population to other mental health providers; (b) test the relationship between indirect exposure to trauma and secondary traumatic stress; and (c) investigate the possible correlates of secondary traumatic stress.

**The Effects of Indirect Trauma Exposure on Providers**

Whereas most studies examining the effects of PTSD have focused on trauma survivors or victims, information about the effect on providers delivering trauma treatment is more limited. Indirect (also called vicarious or secondary) exposure to trauma through work with traumatized patients might have a positive effect on providers' posttraumatic growth (Brockhouse, Msetfi, Cohen, & Joseph, 2011), but it is also predictive of higher distress (Pearlman & Mac Ian, 1995), increased negative cognitions (e.g., low level of self-trust) (Pearlman & Mac Ian, 1995), and higher job burnout (Ballenger-Browning et al., 2011).

The majority of studies investigating the negative effects of indirect trauma exposure on mental health providers have focused on a set of conceptually overlapping outcomes. These include vicarious traumatization (McCann & Pearlman, 1990), compassion fatigue (Figley, 2002), and secondary traumatic stress (Bride, Robinson, Yegidis, & Figley, 2004). The ongoing discussion about the similarities and differences between these concepts (Jenkins & Baird, 2002) shows their definitions share one or more of the following components: indirect exposure to a traumatic material, PTSD symptomology, and negative shifts in therapists' cognitive schema. *Secondary traumatic stress* is usually associated with therapists' PTSD-like reactions, such as intrusive re-experiencing of the traumatic material, avoidance of trauma triggers and emotions, and increased arousal, all resulting from indirect exposure to clients' trauma (Bride et al., 2004). *Compassion fatigue* is defined as reduced empathic capacity or client interest manifested through behavioral and emotional reactions from exposure to traumatizing experiences of others (Adams, Boscarino, & Figley, 2006). Finally, *vicarious trauma* is the negative cognitive shift in therapists' worldview that occurs as a result of their empathetic engagement with their clients' traumatic material (McCann & Pearlman, 1990).

The incongruities in these definitions have led to some research discrepancies on the consequences of indirect trauma exposure and have also hindered cross-sample comparisons. This study utilized the term *secondary traumatic stress* to measure the indirect exposure to clients' trauma material that leads to the providers' PTSD-like symptoms of re-experiencing, avoiding, and hyperarousal, corresponding with criteria B, C, and D, respectively, of the revised fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR;* American Psychiatric Association [APA], 2000).

Using a meta-analytic approach, we aimed to compare the severity of the secondary traumatic stress symptoms identified in the present study sample to the severity of these symptoms among other populations offering services to traumatized clients. As the discrepancies between studies testing the prevalence of secondary traumatic stress may result from applying different assessment methods, *prevalence meta-analysis* should compare data collected with the same measure (e.g., the Secondary Traumatic Stress Scale; Bride et al., 2004).

Prevalence of secondary traumatic stress differs across studies and occupation groups. For example, when measured with the Secondary Traumatic Stress Scale (STSS; Bride et al., 2004), *DSM-IV-TR* (APA, 2000) criteria B, C, and D for a PTSD-like diagnosis of secondary traumatic stress were met by 15.2% of social workers (Bride, 2007), 16.3% of oncology staff (Quinal, Harford, & Rutledge, 2009), 19% of substance abuse counselors (Bride, Smith Hatcher, & Humble, 2009), 20.8% of providers treating family or sexual violence (Choi, 2011a), 32.8% of emergency nurses (Dominguez-Gomez & Rutledge, 2009), 34% of child protective services workers (Bride, Jones, & Macmaster, 2007), and 39% of juvenile justice education workers (Smith Hatcher, Bride, Oh, Moultrie King, & Franklin Catrett, 2011). There is no estimation of prevalence of secondary traumatic stress among mental health specialists providing treatment for

military and veteran patients. In addition, we were unable to identify any research on severity of the intrusion, avoidance, and arousal symptoms in this specific group of providers. Therefore, the present study aimed at identifying secondary traumatic stress prevalence and symptom severity among mental health providers working with military patients.

### **Indirect Exposure to Trauma**

The next aim of the study was to investigate the basic assumption that indirect exposure to traumatic events is a critical factor in the development of secondary traumatic stress symptoms. Whereas measuring direct exposure to trauma is a standard approach in studies on PTSD, many studies on secondary traumatic stress focus more on the PTSD-like symptoms, reflecting *DSM-IV-TR* criteria B, C, and D for a PTSD diagnosis (APA, 2000), and pay less attention to the indirect exposure (criterion A1) hypothetically causing these symptoms. Moreover, even if a measure of indirect exposure is used in a study, it is often analyzed as a dichotomous or one-dimensional variable, usually referring to duration of work with traumatized patients (Galek, Flannelly, Greene, & Kudler, 2011; Devilly, Wright, & Varker, 2009).

Assuming exposure to trauma patients is a one-dimensional construct may partially explain the inconsistencies in research on the associations between indirect trauma exposure and secondary traumatic stress (Sabin-Farrell & Turpin, 2003). To clarify which aspects of the exposure may be relevant for secondary traumatic stress, we accounted for four indices of indirect trauma exposure in mental health providers: diversity, volume, frequency, and ratio. *Diversity* reflected the variety of indirect trauma exposure and allows for determining whether a provider treats patients for PTSD caused by one type of traumatic event (e.g., natural disaster), or whether a provider offers services for patients with PTSD caused by multiple types of traumatic events (e.g., a combat-related experience, transportation accident). *Volume* referred to the

number of patients treated for exposure to a traumatic event. *Frequency* indicated how often a provider was exposed to a patient's traumatic material. *Ratio* indicated the percentage of traumatized patients in the provider's caseload. Further, because mental health providers in this study provided their services to military and veteran patients, the ratio of patients suffering from trauma caused by a military combat experience was also considered.

### **Psychosocial and Work-Related Correlates**

In addition to the indirect exposure to trauma, other psychosocial predictors have been investigated in relation to secondary traumatic stress development. For example, researchers often assume that the provider's own *direct* exposure to traumatic events may contribute to secondary traumatic stress symptomatology (cf. Devilly et al., 2009). Thus, one's personal trauma history should be accounted for when testing for the relationship between indirect exposure and secondary traumatic stress. Recent research indicated, however, that the results of studies testing the relationship between personal history of trauma and secondary traumatic stress were inconclusive (Elwood, Mott, Lohr, & Galovski, 2011). The discrepancies in the results may, to some degree, depend on the type of the direct trauma exposure measured. For example, lifetime personal history of trauma, but not past-year trauma exposure, was positively correlated to secondary traumatic stress in child protective services workers (Bride et al., 2007).

Theories of PTSD emphasize the importance of cognitive appraisals as contributors to the etiology and maintenance of PTSD (Dalgleish, 2004; Ehlers & Clark, 2000). In particular, negative appraisals about the nature and meaning of the event (e.g., whether it offers threat or safety), about the self (e.g., reactions to the event and subsequent trauma symptoms), and about the world (e.g., other people's reaction to the event) are all said to contribute to the development of posttraumatic distress (Ehlers & Clark, 2000). Other types of *cognitive appraisals* may

involve evaluations of the importance or impact of the stress exposure on subsequent functioning. Indeed, theories of stress assume this type of cognitive appraisal as a key component of stress and adaptation processes predictive of stress consequences (Lazarus & Folkman, 1984). Further, the individual's appraisal of the impact of the exposure is related to the *DSM-IV-TR* (APA, 2000) criterion F for the PTSD diagnosis regarding the significance of functional impairment. Therefore, the present study investigated the relationship between the mental health providers' appraisal of the impact of the indirect exposure and secondary traumatic stress.

In addition to the indirect exposure, appraisal of its impact, and direct exposure to trauma, some *work characteristics* may also predict secondary traumatic stress in mental health providers. Theories explaining distress among workers highlighted that work-related demands and work-related support have predicted employees' well-being (Cieslak, Knoll, & Luszczynska, 2007; Van der Doef & Maes, 1999). In line with this assumption, work-related characteristics were found to predict secondary traumatic stress symptoms, and their effect was stronger than the effect of the indirect exposure (Devilley et al., 2009).

One work-related characteristic specific to mental health providers is the *type of psychotherapy* provided, such as Prolonged Exposure. One might consider this to be a risk factor for therapists, yet any assumptions should be made with caution, as providing exposure therapy for trauma patients was not found to be related to secondary traumatic stress. On the other hand, clinicians who advocate exposure therapy but do not provide it for patients were found to present strong secondary traumatic stress symptomatology (Deighton, Gurriss, & Traue, 2007).

Professional *social support* is often identified as a protective factor for the development of secondary traumatic stress. The results, however, are ambiguous even for studies using the same measure of secondary traumatic stress. For example, investigators of Internet child pornography who indicated high social support from family and friends reported low secondary traumatic stress, but strong reliance on coworkers was correlated to high secondary traumatic stress (Perez, Jones, Englert, & Sachau, 2010). High work-related social support was found to predict a low level of avoidance symptoms but was unrelated to intrusion and arousal symptoms of secondary traumatic stress (Argentero & Setti, 2011). Additionally, some aspects of organizational support (e.g., informational support) seem to be an important protective factor for development of secondary traumatic stress symptomatology (Choi, 2011b). There is also evidence for reducing secondary traumatic stress symptoms through professional support received in clinical supervision (Creamer & Liddle, 2005). This evidence shows that professional supervision may constitute a protective factor for development of secondary traumatic stress. Collectively, the research is equivocal on the positive and negative effects of professional support for mental health providers.

In summary, the purpose of this investigation was threefold: (a) to explore the prevalence of secondary traumatic stress among mental health providers working with military patients and compare the severity of secondary traumatic stress symptoms in this population to severity of the symptoms in other populations by means of meta-analysis; (b) to test the relationship between indirect exposure to trauma (measured with a multidimensional assessment of the exposure, including diversity, volume, frequency, and ratio) and secondary traumatic stress; and (c) to investigate the possible correlates of secondary traumatic stress: personal history of trauma,

providers' appraisal of the impact of secondary exposure, work characteristics, and professional support.

## METHODS

### Participants and Procedure

This study was part of the ongoing SupportNet Project designed to evaluate indirect exposure to trauma, work-related demands and resources, and their impact on job burnout, work engagement, and secondary traumatic stress in military mental health providers. Data were collected by means of an online survey. An e-mail with information about the SupportNet study and a link to the survey was sent to on-post and off-post behavioral health providers working with military patients. The off-post providers (i.e., located in the civilian community) received an invitation to the study through an online newsletter sent by TriWest Healthcare Alliance, an organization that manages health benefits for military patients and their families. The on-post providers (i.e., working within military installations) were contacted by e-mail sent by the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, CO and by the Psychology Consultant to the U.S. Army Surgeon General.

Of 339 participants who initially consented to the study, 224 (66%) met the inclusion criteria (i.e., working at least one year as a clinical psychologist, counselor, or social worker; providing services for a military population; and being indirectly exposed to trauma through work with patients) and completed the survey. The average age was 48.92 ( $SD = 13.04$ ) years and the average length of work experience was 16.40 ( $SD = 10.42$ ) years. Demographic and work characteristics of the sample are presented in Table 1. The participants were predominantly women (67%), with doctorate (54%) or master's degrees (46%), working full-time (78%) or part-time (22%) as clinical psychologists (45%), counselors (31%) or social

workers (23%). Slightly more than half of the sample was serving as on-post (57%) and the rest as off-post (43%) behavioral health providers. The sample was almost equally split between those who did and did not have any military experience (44% and 56%, respectively). One fifth of the sample (19%) had deployed to a combat zone at least once. They reported utilizing a mixture of different therapeutic approaches with most reporting Cognitive Behavioral Therapy (CBT, 90%), followed by Cognitive Processing Therapy (CPT, 42%), Prolonged Exposure (PE, 30%) and Eye Movement Desensitization and Reprocessing (EMDR, 29%).

### Measures

**Indirect exposure to trauma.** The Secondary Trauma Exposure Scale (STES) was developed for the purpose of this study to measure mental health providers' indirect exposure to traumatic events. Similar to the brief instruments designed for screening direct exposure to trauma (Norris, 1990), the STES consists of the list of potentially traumatic events. In the STES, however, participants are not instructed to indicate the traumatic events they personally experienced, but to check the events (answers "Yes" or "No") they were exposed to through their work with patients. The list of 10 events included: natural disasters, transportation accidents, other serious accidents, physical assaults, sexual assaults, other life-threatening crimes, military combat or exposure to a warzone, life-threatening illness or injury, sudden death of someone close, and a global category of "other."

The STES measures four aspects of indirect exposure: diversity, volume, frequency, and ratio. The diversity index is calculated by counting how many types of traumatic events were checked on the list (range 0–10). Volume and frequency of an indirect exposure were measured respectively with two separate questions also referring to the list: "During your professional career, how many of your patients experienced at least one of the above events?" (scale 1 to 7:

None; 1 or 2; 10 or less; 50 or less; 100 or less; A few hundred; A few thousand); “During your entire professional career, how frequently have you worked with patients who experienced at least one of the above events?” (scale 1–7: Never; A few days in a year; One day a month; A few days a month; One day a week; A few days a week; Every day). The ratio of indirect exposure was assessed with two questions estimating the percent of providers’ clients who were traumatized or experienced military-related trauma.

**Appraisal of the impact of indirect exposure.** The appraisal of the impact of being exposed to the history and details of patients’ traumatic events was assessed with 10 items. Participants were asked to assess how hearing about each checked event in the STES affected them. The responses are given on a 1 to 7 scale (from “Very Negative” through “Neutral” to “Very Positive”). The item mean score was calculated as the index of appraisal. The Chronbach’s alpha was .92.

**Direct exposure to trauma.** To control for providers’ direct exposure to trauma, we asked a question referring to the list of 10 potentially traumatic events included in the STES: “How many of the types of traumatic events listed above have you personally experienced?” (scale from 0 to 10).

**Secondary traumatic stress.** Symptoms of secondary trauma were measured with the Secondary Traumatic Stress Scale (Bride et al., 2004). This 17-item, self-report instrument evaluated the frequency of intrusion, avoidance, and arousal symptoms resulting from an indirect exposure to trauma at work. The list of symptoms corresponds to the B, C, and D diagnostic criteria for PTSD specified in the *DSM-IV-TR* (APA, 2000). Responses were given on a 1 to 5 scale (from “Never” to “Very Often”). Participants indicated how often each of the symptoms was experienced in the last month. Scores were obtained by summing the items for the entire

scale and for each subscale. Good psychometric properties of this instrument have been demonstrated in many studies (Bride, 2007; Bride et al., 2004). The reliability in our study was  $\alpha = .79$  for intrusion,  $\alpha = .87$  for avoidance,  $\alpha = .84$  for arousal symptoms, and  $\alpha = .93$  for the total score.

**Work characteristics and professional support.** Several survey questions were designed to gain knowledge about work content, work-related demands, and resources. We asked about the primary occupational role (e.g., clinical psychologist, counselor, psychotherapist, or social worker), therapeutic approaches used in work with clients (e.g., CBT, CPT, PE, EMDR), employment status, work experience as a mental health provider, hours of individual and group supervision received monthly, and frequency of professional peer support (scale 1–7: Never; A few days in a year; One day a month; A few days a month; One day a week; A few days a week; Every day). We also assessed participants' perception of their workload in the last month by asking how frequently they were constrained by (1) having too much paperwork and (2) having too many patients (scale 1–5: Less than once per month or never; Once or twice per month; Once or twice per week; Once or twice per day; Several times per day).

**Demographic information.** Socio-demographic information was collected: gender, age, highest level of education, relationship status, military status, and deployment to a combat zone.

## RESULTS

### Work and Exposure Characteristics

Table 2 presents means, standard deviations, and actual and potential ranges for the main variables of the study. On average, participants were receiving 2.51 hours of individual clinical supervision and 2.17 hours of group clinical supervision per month. Additionally, they were receiving peer support by discussing the patients with colleagues on the average of a few days a

month. Respondents also indicated that they were on average constrained by having too many patients (i.e., once or twice per month) and more frequently by having too much paperwork (i.e., once or twice per week). All the providers reported at least one personally experienced traumatic event, with the average number approximately three ( $SD = 1.84$ ). A similar number of personally experienced traumatic events was reported among military medical personnel (Maguen et al., 2009).

In terms of secondary exposure, providers indicated that on average, over the course of their professional career, they treated seven different types of trauma (cf. diversity), worked with a few hundred traumatized patients (cf. volume), and treated traumatized patients for a few days a week (cf. frequency). Providers declared that in their professional career about 63% of patients were traumatized (cf. ratio), and 32% experienced military-related traumas. The appraisal of the impact of this indirect trauma exposure on providers was negative (3.34 on 1-7 scale with 3 meaning “somewhat negative”).

### **Prevalence of Secondary Traumatic Stress in Mental Health Providers Working with Military**

Table 3 presents how many behavioral health providers met the diagnostic criteria for secondary traumatic stress. The algorithm proposed by Bride (2007) follows *DSM-IV-TR* recommendations for a diagnosis of PTSD (APA, 2000) and includes criteria B (intrusion or re-experiencing), C (avoidance), and D (arousal) and their combinations. Criterion A (an indirect or direct exposure to trauma) was met by all our participants as part of the inclusion criteria for the study. According to the algorithm, symptoms of secondary traumatic stress included in the STSS are endorsed if the given corresponding item is scored 3 or higher on a 1–5 scale. At least

one symptom must be endorsed to meet Criterion B, three for Criterion C, and two for Criterion D.

Table 3 shows that despite being indirectly exposed to the traumatic history of patients, 33.9% of the participants did not meet any of the B, C, or D criteria for PTSD. However, 19.2% of providers met all three core criteria for PTSD. Different combinations of two of the criteria were found in 22.8% to 29.5% of the study population. The criterion met most frequently was intrusion (57.6%), followed by arousal (35.3%) and avoidance (29.9%). Table 4 presents descriptive statistics for intensity of intrusion, avoidance, and arousal symptoms and for a total score on the STSS.

#### **Secondary Traumatic Stress Across Different Services: Results of Meta-Analysis**

Descriptive statistics found for behavioral health providers working with the military were compared to statistics obtained from previous studies in which secondary traumatic stress was measured with the STSS. Articles cited in Table 4 were identified through searches of databases (PsychINFO, PILOT, Medline, and ScienceDirect) for peer-reviewed articles published in English through April 2012. The only keyword term used for identification of research was the name of the scale: Secondary Traumatic Stress Scale. A number of criteria had to be met in order to be included in the meta-analytic review. Participants had to be indirectly exposed to trauma through their work. In addition, the article must include information about sample size, mean values, and standard deviations for each subscale of the STSS, and for the total score.

Of the 27 articles identified and reviewed, 5 met inclusion criteria. Most studies were excluded because, although they provided a total score for the STSS, they did not provide appropriate descriptive statistics for intrusion, avoidance, and arousal criteria. Sample size for

individual studies included in the meta-analysis ranged from 89 to 276, and a total of 1,155 participants were included in the meta-analysis.

Table 5 displays the results of the random effect meta-analysis. Results indicated that variation in mean values across studies is due to heterogeneity rather than chance. Mean values for intrusion, avoidance, arousal, and total score from the SupportNet study were contained in a range of respective confidence intervals calculated in the meta-analysis. This indicates that the severity of secondary traumatic stress symptoms in the SupportNet sample is similar to the severity of these symptoms in other investigated populations. This conclusion remains valid even if the results of the current study are excluded from the meta-analysis. The 95% CIs for the symptom severity would be [8.53, 10.51] for intrusion, [12.82, 15.31] for avoidance, [9.06, 11.15] for arousal, and [28.81, 37.45] for total STSS score.

#### **Correlates of the Secondary Traumatic Stress**

Further statistical analyses explored whether the participants' demographic and work-related characteristics were related to secondary traumatic stress. A series of one-way ANOVAs was used to test for secondary traumatic stress differences across gender, relationship status, profession, education levels, employment, military status, deployment, different types of therapeutic approaches used in work with patients (CBT, CPT, PE, or EMDR), and type of work setting (on- versus off-post providers). Descriptive statistics for these variables are presented in Table 1. None of these characteristics had a significant effect on intensity of secondary traumatic stress (all  $F$ s < 1.60 and  $p$ s > .207).

In contrast, several work and personal factors were found to relate to secondary traumatic stress. As shown in Table 6, only one out of five indices of indirect trauma exposure, the ratio of traumatized clients in professional career, was associated with secondary traumatic stress.

Providers' personal history of trauma, being constrained by having too many patients, and too much paperwork were also associated positively with secondary traumatic stress. Finally, the provider's appraisal of impact of indirect exposure to trauma was negatively correlated with secondary traumatic stress (i.e., more negative appraisal of the impact correlated to higher level of symptoms).

### DISCUSSION

A logical extension of the psychological strain endured by military members who have completed deployments to Iraq and Afghanistan is the presence of STS symptoms in those who care for them. Previous research targeting clinicians working with civilian population showed that among those who were indirectly exposed to traumatic material through work a sizeable percentage (15% - 39%) suffered from secondary posttraumatic stress (Bride, 2007; Bride, et al., 2009; Bride, et al., 2007; Choi, 2011a; Dominguez-Gomez & Rutledge, 2009; Smith et al., 2011; Quinal, et al., 2009). The present study documents the level of STS in military behavioral health providers. A limited impact of indirect exposure to trauma at work on developing STS symptoms was found in approximately a third of military behavioral health providers, whereas one in five reported meeting all criteria of PTSD due to indirect exposure to trauma. Compared to rates of current PTSD among veterans (2 -17%; Richardson et al., 2010) or the general population (3.5%; Kessler et al., 2005) the prevalence observed in the present study is high. It may be assumed that the performance of different tasks (including those work-related) may be affected by PTSD symptoms (cf. Wald & Taylor, 2009). As symptoms of STS seem to be a common problem, military behavioral health providers themselves may need easy access to effective psychosocial interventions (for overview see Stergiopoulos, Cimo, Cheng, Bonato, &

Dewa, 2011), targeting the reduction of STS symptoms and therefore improving their work outcomes.

The meta-analytic results demonstrate similar rates of STS symptoms in the sample of military behavioral health providers and among other high-risk professions such as emergency and rescue workers, substance abuse counselors, and agency-based social workers (Argentero & Setti, 2011; Bride, 2007; Bride et al., 2009). The results of our meta-analysis, indicating similar levels of STS symptoms across the studies, support the validity of our findings and allow for cautious generalizations. A lack of differences across workers exposed to secondary trauma and providing services to various types of clients may indicate that the type of performed work (e.g., social work, education, or counseling; working with traumatized families, children, offenders, military) may play a negligible role in explaining STS symptomatology. On the other hand, although STS levels are similar, its symptoms may be explained by different predictors across populations.

Our findings shed light on exposure-related work characteristics which may contribute to the development of STS. Across the indices of exposure only the ratio of traumatized clients in professional career was associated with STS among providers working with military patients. So far, research indicated that the percent of traumatized clients may be a prevalent stressor among professionals working with traumatized clients (Bride et al., 2009). Voss-Horrell et al. (2011) suggested that secondary exposure characteristics, such as years of experience in trauma treatment, total hours per week spent working with trauma patients, and caseload balance, may have a potential to affect clinicians working with veterans of Iraqi and Afghanistan's operations. These suggestions, however, were based on a review of scarce research conducted among providers serving civilian populations. Results of our study suggest that the multi-dimensional

structure of exposure to secondary trauma at work should be taken into account when predicting STS.

Perhaps the most important correlate to consider refers to perceptions of the negative impact of trauma-related work. The importance of cognitive appraisals of significant environmental stressors (i.e., trauma clinical work) is consistent with the general theories of stress and well-being (Lazarus & Folkman, 1984). Research conducted among workers providing services to civilian population and exposed to secondary trauma indicated that associations between stress appraisal and well-being may be particularly relevant among those with lower personal resources, such as self-efficacy (Prati, Pietrantonio & Cicognani, 2010). Future research should look for individual and organizational resources protecting behavioral health providers who perceive high negative impact of work on their own mental health.

As previously noted, job-related demands (e.g., workload, organizational constraints) and resources (e.g., support from peers or superiors) predict employees' well-being (Cieslak et al., 2007; Van der Doef & Maes, 1999). The present study indicated that a higher number of patients and administrative paperwork constitute important work-related demands, associated with higher levels of STS. Voss-Horrell et al. (2011) listed caseload size and a lack of availability of support as the potentially critical job-related demands, influencing well-being of providers working with traumatized veterans of military operations in Iraq and Afghanistan. Our findings are in line with results reported by Devilly et al. (2009) where job stress levels were found to be particularly important in predicting STS.

Work-related resources such as social support and peer supervision were unrelated to STS levels. This finding is in contrast to other research, suggesting that more support from colleagues and supervisory support were related to lower STS among workers providing services

to civilians (Argentero & Setti, 2011; Choi, 2011b; Creamer & Liddle, 2005). Voss-Horrell et al. (2011) also listed peer supervision among potential protective factors, relevant for the mental health of providers working with traumatized veterans of operations in Iraq and Afghanistan. Again, this suggestion was made based on research conducted among providers working with civilian populations. One explanation for the discrepancies between the findings might be the unique nature of the chain-of-command in the supervision of military clinicians. Work stress research highlighted the role of support of managers/superiors in predicting employees' mental health (cf. Cieslak et al., 2007). Clearly, the role of work-related support from different sources (supervisors, co-workers, managers) in predicting STS requires further research.

We found that the greater the number of direct exposure to trauma the higher the reported level of STS. This observation is consistent with previous research, conducted among providers working with civilian clients (Pearlman & MacIain, 1995) and in line with the hypothesized determinants of mental health of providers working with military populations (Voss-Horrell et al., 2011). What remains unclear is how personal trauma history inter-relates with work-based demands, indirect exposure, and resources to influence STS. Future research should investigate whether particular types of trauma, such as childhood abuse (cf. Marcus & Dubi, 2006) may play a particularly salient role and moderate the impact of work-related secondary exposure.

Our study has several limitations. A cross-sectional design does not allow for any causal conclusions. The measure designed to capture direct personal exposure was developed for the study and therefore it has not been previously validated. Although applying such assessment methods as the Clinical Administered PTSD-Scale (CAPS) could be superior, an individual clinical assessment was not feasible for the present study. It should be noted that previous research which measured direct exposure and STS applied even more limited assessment

methods such as “Do you have a trauma history?” (Pearlman & MacIain, 1995). Future research should utilize a standardized clinical interview approach in order to secure more accurate assessment of trauma exposure. Finally, a convenience sample was applied instead of random population-based sampling strategy. Further longitudinal studies targeting representative samples of mental health providers serving military men and women are required.

### CONCLUSIONS AND FUTURE DIRECTIONS

Previous research targeting behavioral health providers working with military patients has been limited (cf. Peterson, Cigrang, & Isler, 2009). Hypothesized risks and resources factors affecting well-being of behavioral health providers working with military were based on findings predominantly referring to civilian providers working with civilian clients (Voss-Horrell et al. 2011). Our study is among the first showing empirical evidence for high prevalence of STS (19.2%) among providers working with the military. Results of meta-analysis contribute to the literature showing that the rates of STS prevalence are similar across samples of workers performing different type of duties, in various populations of clients. Further, the present research highlights the need of multi-dimensional evaluation of secondary exposure, with only one dimension (ratio, i.e, high percentage of traumatized clients in one’s professional career) emerging as a significant correlate of STS. In line with research conducted among workers providing services to traumatized civilians we found that personal history of trauma and constraints related to patient load are associated with STS levels.

Further theory-based research is needed in order to evaluate the role of risk and protective factors related to psychological resiliency factors (Maguen et al., 2008) such as self-efficacy (Prati et al., 2010) or support from superiors (Cieslak et al., 2007) in predicting STS. There is a lack of studies investigating how STS interfaces with other critical negative (e.g., burnout) and

positive (e.g., posttraumatic growth) outcomes. Such studies will provide a critical insight into mechanisms responsible for the onset and maintenance of mental health problems and thus inform the development of theory- and evidence-based supportive interventions, needed for military behavioral health providers.

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Table 1

*Demographic and Work Characteristics of Behavioral Health Providers Participating in the SupportNet Study*

Characteristic	<i>n</i>	%	Characteristic	<i>n</i>	%
<b>Gender</b>			<b>Employment</b>		
Male	75	33	Part-time	49	22
Female	149	67	Full-time	175	78
<b>Relationship status</b>			<b>Military experience</b>		
Long-term committed relationship	169	75	No military service	125	56
Not in a relationship	50	22	Active or former military	98	44
<b>Profession</b>			<b>Deployment</b>		
Clinical psychologist	102	45	Therapy: CBT	201	90
Counselors or psychotherapists	70	31	Therapy: CPT	95	42
Social workers	52	23	Therapy: PE	68	30
<b>Education</b>			<b>Therapy: EMDR</b>		
Master's degree	103	46	Therapy: EMDR	64	29
<b>Doctorate or professional degree</b>			<b>Work setting</b>		
Doctorate or professional degree	120	54	On-post providers	127	57
			Off-post providers	97	43

*Note.* *N* = 224 for total sample. Frequencies may not add up to 224 due to missing data.

Percentages may not sum up to 100% because of missing data or due to rounding.

Table 2

*Descriptive Statistics for the Demographics, Work, and Exposure Characteristics*

Variables	<i>M</i>	<i>SD</i>	Range	
			Actual	Potential
Age	48.92	13.04	28–80	–
Work experience	16.40	10.42	1–45	–
Work characteristics and professional support				
Too much paperwork	2.79	1.31	1–5	1–5
Too many patients	2.01	1.23	1–5	1–5
Hours of individual clinical supervision or consultation per month	2.51	3.90	0–28	–
Hours of group clinical supervision or consultation per month	2.17	3.25	0–20	–
Frequency of peer supervision	4.32	1.49	1–7	1–7
Direct exposure	3.24	1.84	1–9	0–10
Indirect exposure to trauma				
Diversity of exposure	7.41	2.18	1–10	0–10
Volume	5.62	0.97	2–7	1–7
Frequency	6.17	0.96	3–7	1–7
Ratio: Percentage of traumatized patients	63.32	25.25	2–100	0–100
Ratio: Percentage of patients describing a graphic military combat experience	32.02	28.54	0–100	0–100
Appraisal of indirect trauma exposure	3.34	0.77	1–6	1–7
Secondary traumatic stress	31.91	10.65	17–66	17–85

Table 3

*Frequency and Percentage of Behavioral Health Providers Meeting Diagnostic Criteria for Secondary Traumatic Stress Criteria Due to an Indirect Trauma Exposure through a Practice with Traumatized Military Patients*

Criteria	<i>n</i>	%
None criteria met	76	33.9
Criterion B: Intrusion	129	57.6
Criterion C: Avoidance	67	29.9
Criterion D: Arousal	79	35.3
Criteria B and C	53	23.7
Criteria B and D	66	29.5
Criteria C and D	51	22.8
Criteria B, C, and D	43	19.2

Table 4

*Comparing Intensity of Intrusion, Avoidance, Arousal, and Total Score of the STSS In the SupportNet Study with Results Obtained in Other Studies*

Study	Participants (N)	Intrusion M (SD)	Avoidance M (SD)	Arousal M (SD)	Total score M (SD)
SupportNet Study	Behavioral health providers working with military trauma (224)	8.91 (2.96)	13.33 (5.06)	9.68 (3.63)	31.91 (10.65)
Bride (2007)	Social workers (276)	8.18 (3.04)	12.58 (5.00)	8.93 (3.56)	29.69 (10.74)
Bride, Jones, & Macmaster (2007)	Child protective services workers (187)	10.97 (4.07)	15.64 (5.98)	11.58 (4.22)	38.20 (13.38)
Bride, Smith Hatcher, & Humble (2009)	Substance abuse counselors (225)	8.83 (3.28)	13.14 (5.54)	9.27 (4.10)	31.20 (12.30)
Choi (2011a)	Providers for survivors of family or sexual violence (154)	9.10 (2.90)	13.40 (5.00)	9.5 (3.5)	32.07 (10.39)
Smith Hatcher, Bride, Oh, Moultrie King, & Franklin Catrett (2011)	Juvenile justice education workers (89)	10.64 (3.19)	15.73 (4.90)	11.37 (3.79)	37.74 (10.74)

Table 5

*Meta-Analysis Results for Severity of Secondary Traumatic Stress Symptoms*

Secondary traumatic stress	<i>k</i>	<i>M</i>	Heterogeneity		95% CI for <i>M</i>		<i>Z</i>
			<i>Q</i>	<i>I</i> <sup>2</sup>	Lower Level	Upper Level	
Intrusion	6	9.41	87.84***	94.31	8.63	10.19	23.58***
Avoidance	6	13.93	52.50***	90.48	12.94	14.92	27.49***
Arousal	6	10.03	70.02***	92.86	9.20	10.86	23.76***
Total score	6	32.91	132.98***	96.24	29.51	36.31	18.96***

\*\*\**p* < .001, *N* = 1,155

Table 6  
Correlations between Study Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	—													
2. Work experience	.77***	—												
Work characteristics and professional support														
3. Too much paperwork	.03	.05	—											
4. Too many patients	-.19**	-.12	.49***	—										
5. Hours of individual clinical supervision or consultation per month	-.34***	-.35***	.07	.07	—									
6. Hours of group clinical supervision or consultation per month	-.28***	-.31***	.12	.11	.51***	—								
7. Frequency of peer supervision	-.25***	-.13	.05	.09	.31***	.32***	—							
8. Direct exposure	.17*	.12	.16*	.09	-.02	.06	.01	—						
Indirect exposure														
9. Diversity	.09	.09	-.03	-.08	-.07	.03	.08	.15*	—					
10. Volume	.00	.17*	.20***	.19**	-.04	-.07	.17**	.15*	.26***	—				
11. Frequency	-.06	-.01	.06	.15*	.11	-.01	.32***	.07	.15*	.49***	—			
12. Ratio: Percentage of traumatized patients	.04	-.01	.05	.08	.04	.04	.09	.15*	.14*	.26***	.40***	—		
13. Ratio: Percentage of patients describing a graphic military combat experience	-.29***	-.17*	.02	.27***	.12	-.09	.19**	.05	-.10	.17*	.23***	.30***	—	
14. Appraisal of indirect trauma exposure	-.10	-.04	-.09	-.12	.08	-.06	.15*	-.01	.17**	.21***	.08	-.11	-.10	—
15. Secondary traumatic stress	.00	.02	.23***	.35***	.06	.09	-.01	.21***	-.01	.05	-.08	.14*	.13	-.37***

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

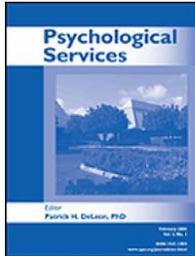
## Appendix 9

# The Relationship Between Secondary Traumatic Stress and Job Burnout: A Meta-Analysis

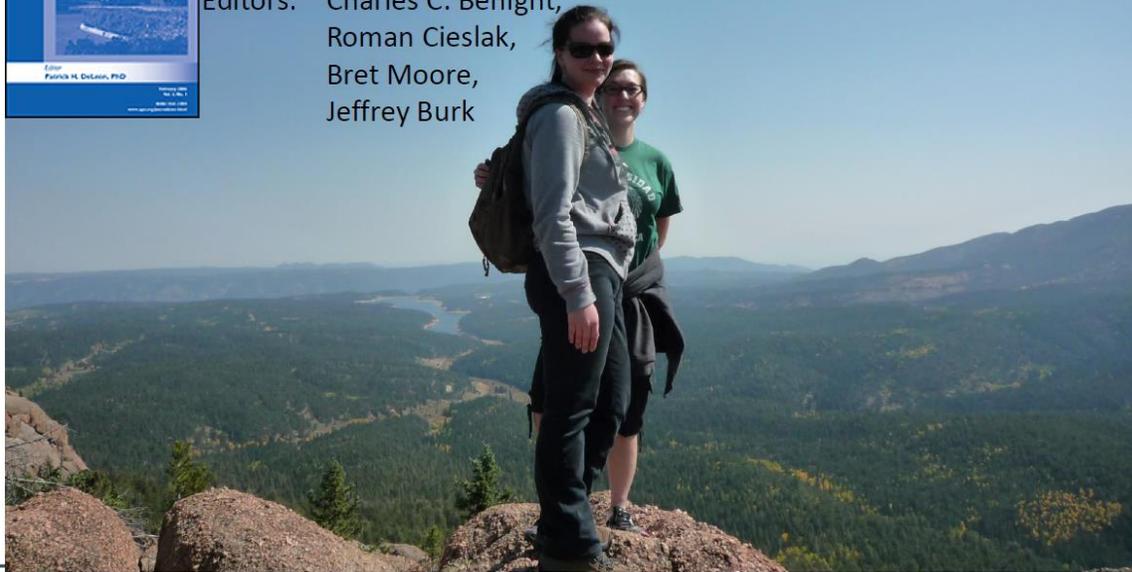
Roman Cieslak,  
Kotaro Shoji,  
Charles C. Benight,  
Aleksandra Luszczynska



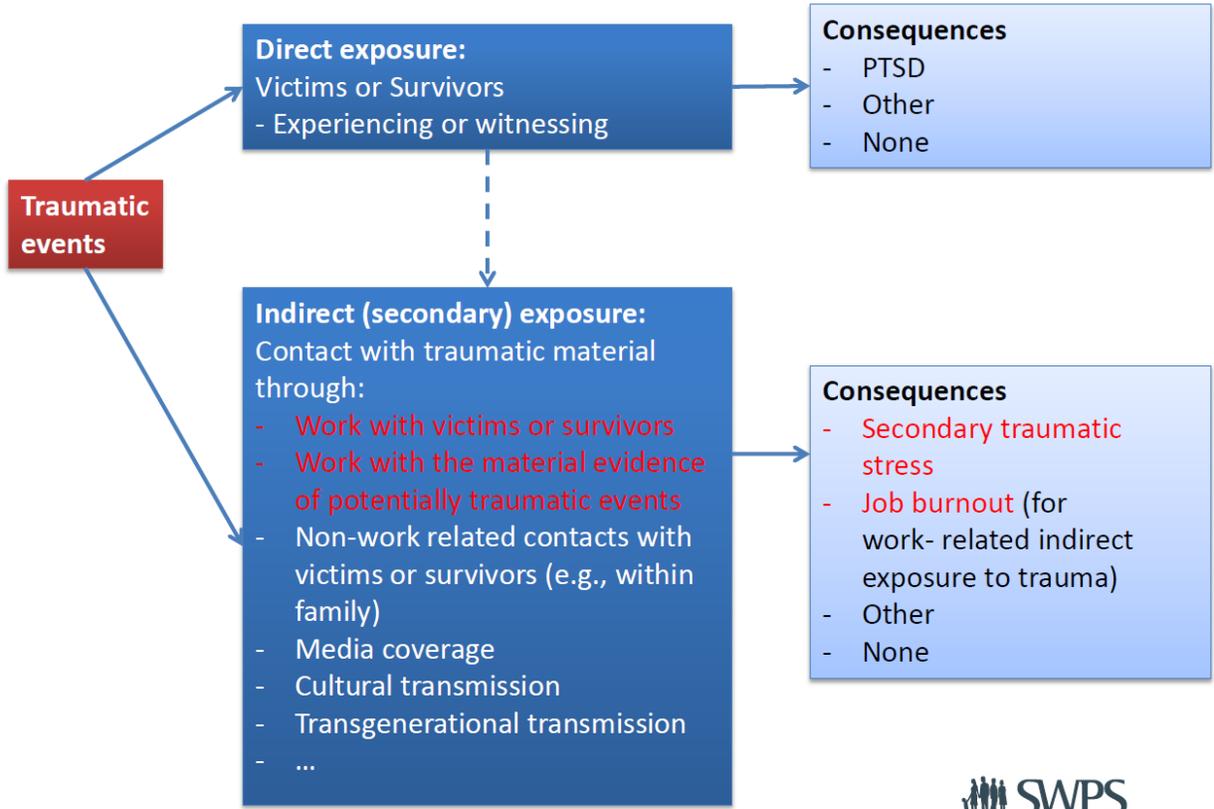
Cieslak, R., Shoji, K., Douglas, A., Melville, E., Luszczynska, A., & Benight, C.C. (in press). A Meta-Analysis of the Relationship between Job Burnout and Secondary Traumatic Stress among Workers with Indirect Exposure to Trauma. *Psychological Services*.



Secondary Trauma and Burnout  
The APA Journal: *Psychological Services*  
Special Issue: Secondary Trauma and Burnout  
Editors: Charles C. Benight,  
Roman Cieslak,  
Bret Moore,  
Jeffrey Burk



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## Aims of the Study

Two negative **consequences of work-related indirect exposure to trauma**:

1. Secondary traumatic stress (STS);
2. Job burnout (JB).

Are these consequences correlated?

Yes, but they should be **only moderately related** (between .30 and .70) as their theoretical frameworks each have a different emphasis.

Differences in **defining and measuring** job burnout and secondary traumatic stress may be crucial for testing the relationship between these two consequences of secondary exposure to trauma.

Understanding possible moderators such as **culture and gender** may offer important insights.



## STS: Definitions

**Secondary traumatic stress** (also called secondary posttraumatic stress; secondary PTSD) is usually conceptualized as **reactions resembling PTSD**, and thus includes symptoms that are parallel to those observed in people directly exposed to trauma (Bride et al., 2004)

- *Secondary Traumatic Stress Scale* (STSS; Bride et al., 2004), 17 items to measure three clusters of symptoms: **intrusive re-experiencing** of the traumatic material, **avoidance** of trauma triggers and emotions, and increased physical **arousal** (Bride et al., 2004) (see criteria B, C, and D for PTSD).

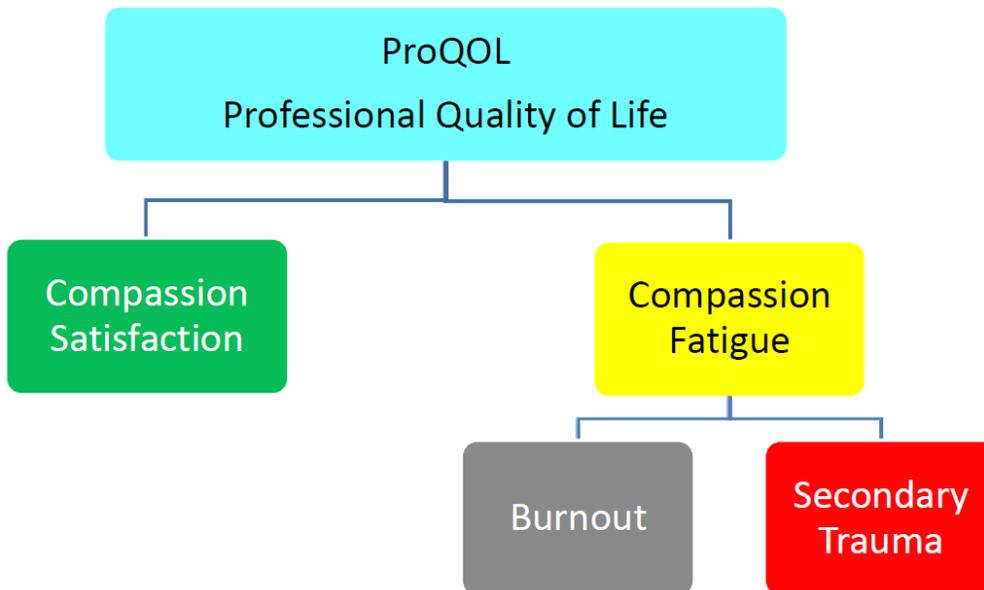
**Vicarious trauma** focuses on **cognitive effects** of indirect exposure. A negative shift in worldview occurs as a result of an empathetic engagement with clients' or patients' traumatic material (Pearlman, 1996).

- *Traumatic Stress Institute Belief Scale, Revision L* (TSI-BSL; Pearlman, 1996) measures vicarious trauma and accounts for **cognitive disruptions** in the five schema areas: safety, trust, esteem, intimacy, and control.

**Compassion fatigue** is defined as a **reduced empathic capacity or client interest** manifested through **behavioral and emotional reactions** from exposure to traumatizing experiences of others (Adams, et al., 2006).

- *Professional Quality of Life* (ProQOL; Stamm, 2010).





Source: [www.proqol.org](http://www.proqol.org)



[www.swps.pl](http://www.swps.pl)

**PROFESSIONAL QUALITY OF LIFE SCALE (PROQOL)**

COMPASSION SATISFACTION AND COMPASSION FATIGUE  
(PROQOL) VERSION 5 (2009)

When you [help] people you have direct contact with their lives. As you may have found, your compassion for those you [help] can affect you in positive and negative ways. Below are some-questions about your experiences, both positive and negative, as a [helper]. Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the last 30 days.

	1=Never	2=Rarely	3=Sometimes	4=Often	5=Very Often
_____ 1.					
_____ 2.					
_____ 3.					
_____ 4.					
_____ 5.					
_____ 6.					
_____ 7.					
_____ 8.					
_____ 9.					
_____ 10.					
_____ 11.					
_____ 12.					
_____ 13.					
_____ 14.					
_____ 15.					
_____ 16.					
_____ 17.					
_____ 18.					
_____ 19.					
_____ 20.					
_____ 21.					
_____ 22.					
_____ 23.					
_____ 24.					
_____ 25.					
_____ 26.					
_____ 27.					
_____ 28.					
_____ 29.					
_____ 30.					

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**YOUR SCORES ON THE PROQOL: PROFESSIONAL QUALITY OF LIFE SCREENING**

Based on your responses, place your personal scores below. If you have any concerns, you should discuss them with a physical or mental health care professional.

**Compassion Satisfaction**

Compassion satisfaction is about the pleasure you derive from being able to do your work well. For example, you may feel like it is a pleasure to help others through your work. You may feel positively about your colleagues or your ability to contribute to the work setting or even the greater good of society. Higher scores on this scale represent a greater satisfaction related to your ability to be an effective caregiver in your job.

The average score is 50 (SD 10; alpha scale reliability .88). About 25% of people score higher than 57 and about 25% of people score below 43. If you are in the higher range, you probably derive a good deal of professional satisfaction from your position. If your scores are below 40, you may either find problems with your job, or there may be some other reason—for example, you might derive your satisfaction from activities other than your job.

**Burnout**

Most people have an intuitive idea of what burnout is. From the research perspective, burnout is one of the elements of Compassion Fatigue (CF). It is associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively. These negative feelings usually have a gradual onset. They can reflect the feeling that your efforts make no difference, or they can be associated with a very high workload or a non-supportive work environment. Higher scores on this scale mean that you are at higher risk for burnout.

The average score on the burnout scale is 50 (SD 10; alpha scale reliability .75). About 25% of people score above 57 and about 25% of people score below 43. If your score is below 43, this probably reflects positive feelings about your ability to be effective in your work. If you score above 57 you may wish to think about what at work makes you feel like you are not effective in your position. Your score may reflect your mood; perhaps you were having a "bad day" or are in need of some time off. If the high score persists or if it is reflective of other worries, it may be a cause for concern.

**Secondary Traumatic Stress**

The second component of Compassion Fatigue (CF) is secondary traumatic stress (STS). It is about your work related, secondary exposure to extremely or traumatically stressful events. Developing problems due to exposure to other's trauma is somewhat rare but does happen to many people who care for those who have experienced extremely or traumatically stressful events. For example, you may repeatedly hear stories about the traumatic things that happen to other people, commonly called Vicarious Traumatization. If your work puts you directly in the path of danger, for example, field work in a war or area of civil violence, this is not secondary exposure; your exposure is primary. However, if you are exposed to others' traumatic events as a result of your work, for example, as a therapist or an emergency worker, this is secondary exposure. The symptoms of STS are usually rapid in onset and associated with a particular event. They may include being afraid, having difficulty sleeping, having images of the upsetting event pop into your mind, or avoiding things that remind you of the event.

The average score on this scale is 50 (SD 10; alpha scale reliability .81). About 25% of people score below 43 and about 25% of people score above 57. If your score is above 57, you may want to take some time to think about what at work may be frightening to you or if there is some other reason for the elevated score. While higher scores do not mean that you do have a problem, they are an indication that you may want to examine how you feel about your work and your work environment. You may wish to discuss this with your supervisor, a colleague, or a health care professional.

**WHAT IS MY SCORE AND WHAT DOES IT MEAN?**

In this section, you will score your test so you understand the interpretation for you. To find your score on each section, total the questions listed on the left and then find your score in the table on the right of the section.

**Compassion Satisfaction Scale**

Copy your rating on each of these questions on to this table and add them up. When you have added them up you can find your score on the table to the right.

- 3. \_\_\_\_\_
- 6. \_\_\_\_\_
- 12. \_\_\_\_\_
- 16. \_\_\_\_\_
- 18. \_\_\_\_\_
- 20. \_\_\_\_\_
- 22. \_\_\_\_\_
- 24. \_\_\_\_\_
- 27. \_\_\_\_\_
- 30. \_\_\_\_\_

**Total:** \_\_\_\_\_

The sum of my Compassion Satisfaction questions is	So My Score Equals	And my Compassion Satisfaction level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

**Burnout Scale**

On the burnout scale you will need to take an extra step. Starred items are "reverse scored." If you scored the item 1, write a 5 beside it. The reason we ask you to reverse the scores is because scientifically the measure works better when these questions are asked in a positive way though they can tell us more about their negative form. For example, question 1. "I am happy" tells us more about

- \*1. \_\_\_\_\_
- \*4. \_\_\_\_\_
- 8. \_\_\_\_\_
- 10. \_\_\_\_\_
- \*15. \_\_\_\_\_
- \*17. \_\_\_\_\_
- 19. \_\_\_\_\_
- 21. \_\_\_\_\_
- 26. \_\_\_\_\_
- \*29. \_\_\_\_\_

**Total:** \_\_\_\_\_

The sum of my Burnout Questions is	So my score equals	And my Burnout level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

You Wrote	Change to	the effects of helping when you are not happy so you reverse the score
2	5	
3	4	
4	3	
5	2	

**Secondary Traumatic Stress Scale**

Just like you did on Compassion Satisfaction, copy your rating on each of these questions on to this table and add them up. When you have added them up you can find your score on the table to the right.

- 2. \_\_\_\_\_
- 5. \_\_\_\_\_
- 7. \_\_\_\_\_
- 9. \_\_\_\_\_
- 11. \_\_\_\_\_
- 13. \_\_\_\_\_
- 14. \_\_\_\_\_
- 23. \_\_\_\_\_
- 25. \_\_\_\_\_
- 28. \_\_\_\_\_

**Total:** \_\_\_\_\_

The sum of my Secondary Trauma questions is	So My Score Equals	And my Secondary Traumatic Stress level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

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## Job Burnout within Compassion Fatigue Framework

Job burnout within compassion fatigue framework is described as being “**associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively**” (Stamm, 2010, p. 13).

Job burnout definition included in compassion fatigue framework **differs** from the more common approaches that focus more on **exhaustion** (e.g. Demerouti et al., 2003; Maslach et al., 2001).



## Job Burnout: Three-Component Definition

Job burnout may be defined as “a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by three dimensions: **exhaustion, cynicism, and inefficacy**” (Maslach et al., 2001, p. 397).

- *The Maslach Burnout Inventory – General Survey* (MBI-GS; Maslach et al., 2001).
- *The MBI-Human Services Survey* - in occupations requiring contact with patients
- *the MBI-Educators Survey* – for professionals working with students or pupils
- 

Two out of three job burnout components are named differently in MBI-GS than in other MBI versions

Cynicism = Depersonalization

Inefficacy = Reduced personal accomplishment

## The Exhaustion-Focused Conceptualizations of Job Burnout

1. “Personal burnout is the degree of physical and psychological fatigue and **exhaustion** experienced by the person” (Kristensen, Borritz, Villadsen, & Christensen, 2005, p. 197) and should be measured in a domain-specific contexts.  
- *The Copenhagen Burnout Inventory (CBI)*: personal, work-related, and client-oriented burnout.
2. “Burnout is a state of physical, emotional, and mental **exhaustion**” (cf. Malach-Pines, 2005, p. 78).  
- *The Burnout Measure (BM)*: the 21-item and 10-item versions.
3. Job burnout “as relating to individuals’ feelings of physical, emotional, and cognitive **exhaustion**, thus focusing on continuous depletion of the individuals’ energetic coping resources resulting from their chronic exposure to occupational stress” Shirom & Melamed , 2006, p. 179).  
- *The Shirom-Melamed Burnout Measure (SMBM)*: depletion in three areas (physical strength, emotional energy, and cognitive liveliness), 12 items.

## A Two-Dimensional Job Burnout Framework

A two-dimensional job burnout framework focuses on **exhaustion** and **disengagement** from work, defined as “distancing oneself from one’s work and experiencing negative attitude toward the work objects, work content, or one’s work in general” (Demerouti, Bakker, Vardakou, & Kantas, 2003, p. 14).

- *The Oldenburg Burnout Inventory (OLBI)*

Burnout defined as “a consequence of intensive physical, affective, and cognitive strain, i.e., as a long-term consequence of prolonged exposure to certain job demands” (Demerouti et al., 2003, p. 14).

## Study Aims

**To systematically review and meta-analyze the associations between STS and job burnout  
To test the effects of moderators:**

- (a) The type of **measurement used for STS** assessment (measures of cognitive shift or PTSD-like symptoms *versus* measures of compassion fatigue);
- (b) The type of **assessment of job burnout** (the ProQOL burnout subscale *versus* other job burnout instruments, such as the MBI and the OLBI which have clearly defined emotional exhaustion as a key component);
- (c) The **theoretical framework** (the compassion fatigue approach *versus* other approaches to job burnout and secondary traumatic stress),

**Other potential moderators:**

- (a) The **country** where the study was conducted (the U.S. *versus* other countries),
- (b) The **continent** where the study was conducted (North America *versus* others),
- (c) The **measurement language** (English or others),
- (d) **Gender** (predominantly male sample consisting of at least 75% men *versus* predominantly female sample consisting of at least 75% women),
- (e) **Occupations** with higher likelihood of both direct and indirect work-related trauma exposure (e.g., rescue/emergency workers, nurses, social workers, firefighters) *versus* occupations that may involve only indirect work-related trauma exposure (e.g. therapists, social workers).



## Literature Search

- Independent studies available before 2012.
- Databases: PILOTS, ScienceDirect, Scopus, and Web of Knowledge.
- Combinations of the keywords:
  - job burnout (“burnout” or “burn-out”)
  - secondary traumatic stress (“trauma\*”, “posttrauma\*”) - asterisks indicate that a keyword may consist of the stem and any suffix (e.g., “traumatic”).
  - “compassion fatigue” and “PTSD”.
- Manual searches of the reference lists were conducted.
- At least two of the authors (KS, RC, AD or EM) were involved at all stages of data extraction, coding, synthesis, and analysis.

**The initial search resulted in 337 papers.**

## Inclusion/Exclusion Criteria

- (a) STS and job burnout were **measured** at some time point.
- (b) The **relationship** between STS and job burnout was assessed, or authors provided appropriate statistics upon request;
- (c) Papers reported **statistics** that could be converted into Pearson's coefficient (e.g., t-test, F-test,  $\chi^2$ , z-test);
- (d) Original studies enrolled **workers** performing job tasks involving contact with traumatized clients/patients or traumatic material.
- (e) **English-language** publication restriction was applied (although the measurement itself could be in a non-English language).
- (f) Dissertations and book chapters were excluded.
- (g) Studies applying qualitative methods, narrative reviews, and research on non-workers (e.g., student samples) were excluded.
- (h) When two or more studies used the same sample, only one publication was included.

The selection processes resulted in 45 studies meeting all inclusion criteria.

However, four of those studies were excluded from further analysis, because they were identified as outliers with z-scores greater than 10 or less than -10 (Alkema, Linton, & Davies, 2008; Backholm & Björkqvist, 2010; Lauvrud, Nonstad, & Palmstierna, 2009; Maunder et al., 2006).

Thus, **41 original studies were analyzed.**

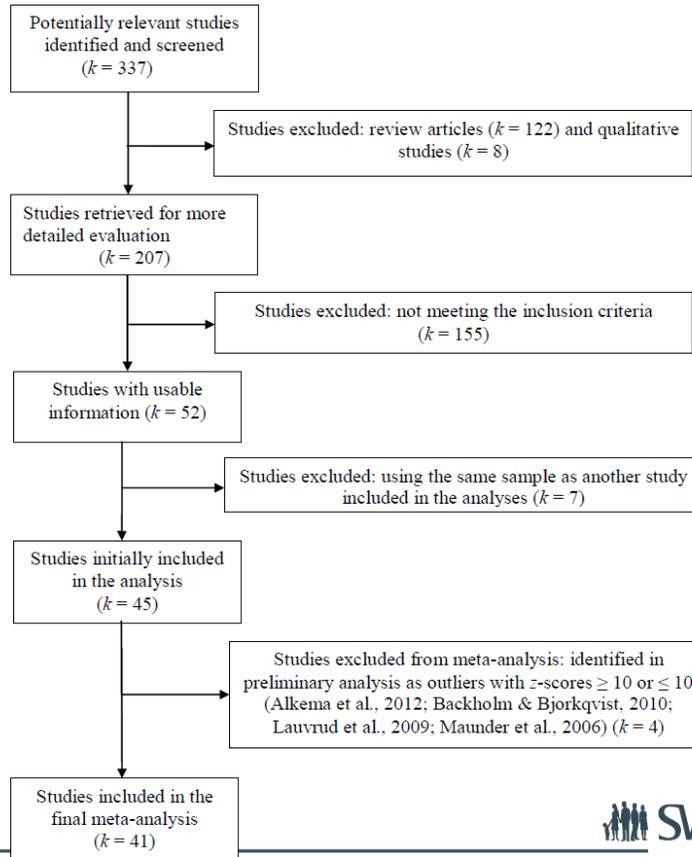


## Selection of Studies

k = 337



k = 41



## Description of Analyzed Material

$k = 41$  original studies.

$N =$  data from 8,256 workers were analyzed .

Sample sizes: varied from 13 to 961 participants ( $M = 198.63$  ,  $SD = 205.48$ ).

Gender: 59.03% of women in the average sample .

Occupational groups:

- therapists, mental health professionals, social workers, and counselors (36.58%;  $k = 15$ ),
- emergency, ambulance or rescue workers (12.20%;  $k = 5$ ),
- child care workers and child healthcare providers (9.76%;  $k = 4$ ),
- nurses (7.32%;  $k = 3$ ),
- forensic specialists (4.88%;  $k = 2$ ),
- chaplains (4.88%;  $k = 2$ ),
- and other non-categorized professionals (24.39%,  $k = 10$ ).

## Description of Analyzed Material

### Geography:

- 22 studies (53.66%) in North America
- 4 studies (9.76%) in Israel
- 3 in Italy (7.32%),
- 2 in Australia (4.88%), 2 in the Netherlands (4.88%)

Only 2 multi-country studies (4.88%) - conducted both in Canada and the U.S.

Only 3 studies (7.32%) from Africa or Asia.

### Language:

- An English-language version of the questionnaires was applied in 65.85% ( $k = 27$ ) of the studies.

## Description of Analyzed Material

The most popular measures:

- STS was measured within compassion fatigue framework (Figley & Stamm, 1996). These ProQOL-related measures were used in **65.85% of studies** ( $k = 27$ ) and among 5,343 respondents (64.72% of the total sample).
- Job burnout was measured within compassion fatigue framework . The ProQOL was applied in **60.98% of studies** ( $k = 25$ ), with 5,409 (6.51% of the total sample)

Overall, ProQOL was used in **34.15% of studies** ( $k = 14$ ) to assess both STS and burnout constructs.

## JB-STIS: Overall Effect and Measures and Framework as Moderators

	<i>r</i>	<i>r</i> Range	<i>r</i> 95% CI	<i>n</i>	<i>k</i>	<i>Q</i>	<i>I</i> <sup>2</sup> %	Fail-Safe <i>N</i>	<i>t</i>
Overall effect	.691	.252-.941	.647-.731	8256	41	478.49*	91.64	10603	-
Measures									
STS measure									39.96**
ProQOL or related	.729	.435-.941	.693-.762	5343	27	153.94*	83.11	14138	
STS as PTSD-like symptoms	.608	.252-.878	.483-.709	2913	14	287.43*	95.48	4829	
Job burnout measure									
ProQOL-related versus other measures									52.33**
ProQOL or related	.744	.505-.941	.710-.775	5409	25	142.39*	83.15	14163	
Other	.589	.252-.878	.471-.687	2847	16	273.58*	94.52	4817	
Framework applied									
Compassion fatigue versus other approaches									51.18**
Only compassion fatigue framework	.744	.505-.941	.707-.776	4958	23	132.03*	83.34	9879	
No measure from the compassion fatigue framework	.578	.252-.878	.426-.699	2462	12	261.60*	95.80	3029	
Compassion fatigue versus mixed approach									44.69**
Only compassion fatigue framework	.744	.505-.941	.707-.776	4958	23	132.03*	83.34	9879	
At least one measure from other framework	.612	.252-.878	.509-.697	3298	18	299.43*	94.32	7033	



## JB-STs: Other Moderators

	<i>r</i>	<i>r</i> Range	<i>r</i> 95% CI	<i>n</i>	<i>k</i>	<i>Q</i>	<i>I</i> <sup>2</sup> %	Fail-Safe <i>N</i>	<i>t</i>
Country									18.00**
USA	.725	.435-.842	.678-.767	3572	19	129.17*	86.07	2698	
Other countries	.675	.256-.941	.604-.736	4132	20	245.87*	92.27	10483	
Continent									3.79**
North America (USA and Canada)	.697	.252-.842	.636-.748	4313	22	252.03*	91.67	5846	
Countries from other continents	.685	.256-.941	.615-.745	3943	19	224.18*	91.97	9797	
Language of applied measures									14.22**
English	.706	.252-.941	.653-.752	4670	27	269.56*	90.36	10994	
Other	.662	.256-.881	.574-.735	3586	14	204.82*	93.65	6395	
Gender									14.58**
Primarily male (at least 75% of males)	.608	.256-.827	.448-.729	1211	6	60.63*	91.75	731	
Primarily female (at least 75% of females)	.692	.252-.878	.594-.769	2744	15	256.61*	94.54	7205	
Occupations									18.27**
With higher likelihood of secondary exposure only	.719	.252-.941	.652-.775	3526	22	271.20*	92.26	2787	
With higher likelihood of both primary exposure and secondary exposure	.662	.256-.827	.601-.715	4730	19	198.42*	90.93	2496	

## Summary

Coexistence of STS and JB in professionals exposed indirectly to trauma in their work. The meta-analysis of 41 studies suggested that the association between these two constructs was high ( $r = .691$ ), and that these two concepts may share as much as **48%** of the variance.

If both STS and JB are measured within the compassion fatigue approach (i.e., by means of the ProQOL and related measures), the proportion of shared variance is significantly larger than if the measures are derived from any of the other approaches (**55% versus 34%** of shared variance).

Significantly larger overlap between STS and job burnout may be expected

- if the data are collected **in the U.S.** (compared to other countries);
- If **English-language** versions of questionnaires are applied (compared to other-language versions);
- In primarily **female samples**;
- In occupations which are likely to involve **only indirect exposure** (compared to professionals who are likely to be directly and indirectly exposed to trauma at work).





Thank you!



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## STS: An umbrella term

We use the umbrella term, **secondary traumatic stress (STS)**, to discuss such effects of secondary exposure as

- secondary posttraumatic stress (Bride et al., 2004),
- vicarious traumatization (McCann & Pearlman, 1990), and
- and secondary traumatic stress aspect of compassion fatigue (Figley, 2002).





## **Appendix 10**

### Secondary Traumatic Stress in Military Mental Health Providers





# Secondary Trauma in Military Mental Health Providers

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Professor of Psychology  
Director CU: Trauma, Health, & Hazards Center  
University of Colorado Colorado Springs

This presentation was made possible by a research grant awarded to Charles C. Benight and administered by the U.S. Army Medical Research & Materiel Command (USAMRMC) and the Telemedicine & Advanced Technology Research Center (TATRC) at Fort Detrick, MD under Contract Number W81XWH-11-2-0153.

Sincere thanks to the hospital command and behavioral health department at Fort Caron.

The views expressed in this article are solely those of the authors and do not represent an endorsement by or the official policy of the U.S. Army, the Department of Defense, or the U.S. Government.



**ISTSS**

International Society  
for Traumatic Stress Studies

ISTSS 29th Annual Meeting

## **Resilience After Trauma: From Surviving to Thriving**

**November 7-9, 2013**

**Pre-Meeting Institutes, November 6**

Philadelphia Marriott Downtown, Philadelphia, PA USA

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## Research Team

- Dr. Roman Cieslak
- Dr. Kotaro Shoji
- Dr. Valerie Anderson
- Dr. Judith Bock
- Dr. Fred Gibson
- Dr. Bret Moore
- Dr. Alan Peterson





## Overview of Problem

- No available information on secondary traumatic stress prevalence estimates in military mental health providers.
- The Department of Veterans Affairs has observed a huge increase in the number of patients with PTSD receiving behavioral health services, from 139,062 in 1997 to 279,256 in 2005 (Rosenheck and Fontana, 2007).

## Overview of Problem

- Over 1.6 million troops have been deployed in Iraq and Afghanistan. Approximately 10 to 14% will be diagnosed with PTSD.
- More than 60,000 troops have done 3 or more tours.
- Approximately, 31,882 and 6,773 have been reported as wounded in action in OIF and OEF, respectively.



THE MENTAL HEALTH DEMAND IS  
BEYOND COMPARE.



## **Overview: PTSD-like diagnosis of Secondary Traumatic Stress met by:**

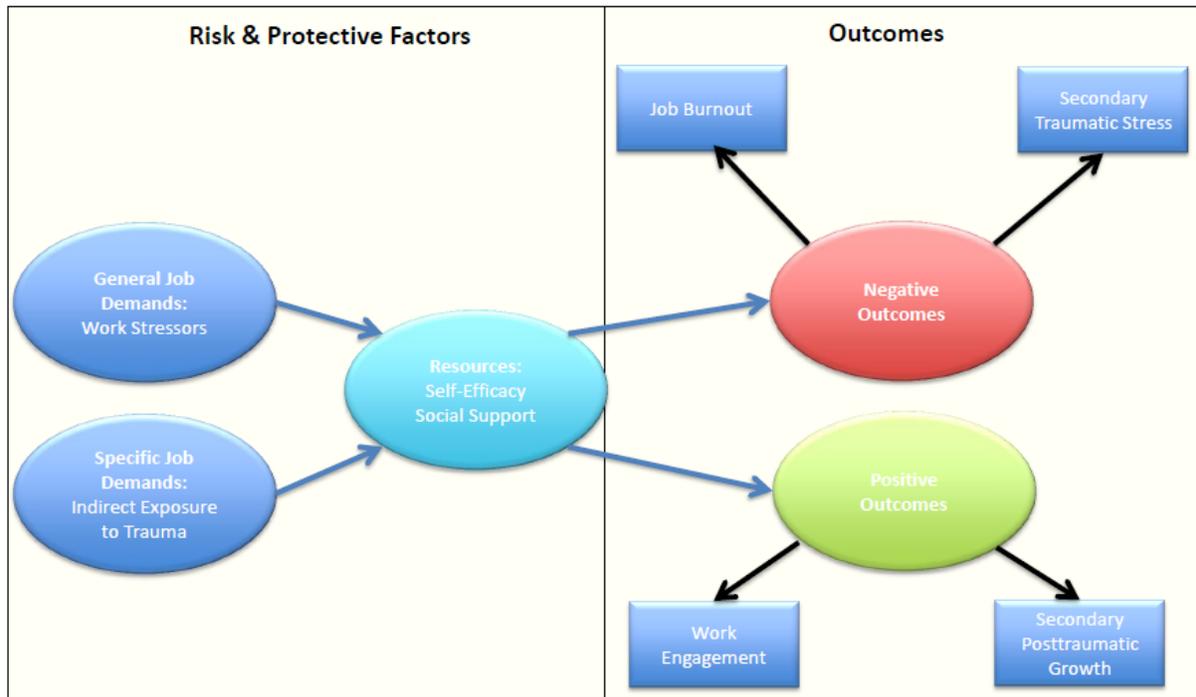
- 15.2% of social workers (Bride, 2007).
- 19% of substance abuse counselors (Bride et al., 2009).
- 20.8% of providers treating family or sexual violence (Choi, 2011a).
- 32.8% of emergency nurses (Dominguez-Gomez and Rutledge, 2009).
- 34% of child protective services workers (Bride et al., 2007).
- 39% of juvenile justice education workers (Smith Hatcher et al., 2011).



## Support Net Project: Research Aims

- **Aim 1:** Determine the current level of secondary trauma, burnout and work engagement in military mental health providers.
- **Aim 2:** Evaluate the utility of social cognitive theory as a framework for understanding the stress process for military mental health providers.

## Theoretical Model: SupportNet Study



## Procedure

- Data were collected by means of an online survey. An e-mail with information about the SupportNet study and a link to the survey was sent to on-post and off-post behavioral health providers working with military patients.
- Off-post providers received an invitation to the study through an online newsletter sent by TriWest Healthcare Alliance.
- The on-post providers were contacted by e-mail sent by the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, CO and by the Psychology Consultant to the U.S. Army Surgeon General.

## Participants

- Of 339 participants 224 (66%) met the inclusion criteria (working at least one year as a clinical psychologist, counselor, or social worker; providing services for a military population; and being indirectly exposed to trauma through work with patients).
- Slightly more than half of the sample was serving as on-post (57%) and the rest as off-post (43%) behavioral health providers.
- Equally split between those who did and did not have any military experience (44% and 56%, respectively).
- 19% had deployed to a combat zone at least once.
- The average age was 48.92 ( $SD = 13.04$ ) years and the average length of work experience was 16.40 ( $SD = 10.42$ ) years.
- The participants were predominantly women (67%)



## Therapy Orientations

- 90% Cognitive Behavioral Therapy
- 42% Cognitive Processing Therapy
- 30% Prolonged Exposure
- 29% Eye Movement Desensitization and Reprocessing

## Indirect and Direct Trauma Exposure

- ***Indirect Exposure and Appraisal of the impact of indirect exposure.*** Participants were asked to assess how hearing about each checked event in the STES affected them. The responses are given on a 1 to 7 scale (from “Very Negative” through “Neutral” to “Very Positive”).
- **Direct Exposure:** List of 10 potentially traumatic events included in the STES: “How many of the types of traumatic events listed above have you personally experienced?” (scale from 0 to 10).

## Secondary Traumatic Stress & Burnout

- **Secondary Traumatic Stress Scale** (Bride et al., 2004). 17-items that match the list of symptoms corresponds to the B, C, and D diagnostic criteria for PTSD specified in the *DSM-IV-TR*. Responses were given on a 1 to 5 scale (from “Never” to “Very Often”).
- **Oldenberg Burnout Inventory**. Assesses cognitive and physical components of exhaustion.

## ***Work characteristics and professional support.***

- Primary occupational role (clinical psychologist, counselor, psychotherapist, or social worker), therapeutic approaches used in work with clients (CBT, CPT, PE, EMDR).
- Employment status (part-time, full time).
- Years of work experience as a mental health provider.
- The exact number of hours of individual and group supervision received monthly, and frequency of professional peer support (scale 1–7: Never; A few days in a year; One day a month; A few days a month; One day a week; A few days a week; Every day).
- Workload in the last month: constrained by (1) having too much paperwork and (2) having too many patients (scale 1–5: Less than once per month or never; Once or twice per month; Once or twice per week; Once or twice per day; Several times per day).

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## Findings and Implications



*Frequency and Percentage of Behavioral Health Providers Meeting Diagnostic Criteria for Secondary Traumatic Stress Criteria Due to an Indirect Trauma Exposure through a Practice with Traumatized Military Patients*

Criteria	<i>n</i>	%
None criteria met	76	33.9
Criterion B: Intrusion	129	57.6
Criterion C: Avoidance	67	29.9
Criterion D: Arousal	79	35.3
Criteria B and C	53	23.7
Criteria B and D	66	29.5
Criteria C and D	51	22.8
Criteria B, C, and D	43	19.2

## Correlates of STS

- STS correlated significantly with:
  - Too much paperwork ( $r = .23$ ).
  - Too many patients. ( $r = .35$ )
  - Direct exposure to trauma ( $r = .21$ )
  - Indirect exposure ratio of trauma patients ( $r = -.14$ )
  - Appraisal of indirect exposure ( $r = -.37$ ).

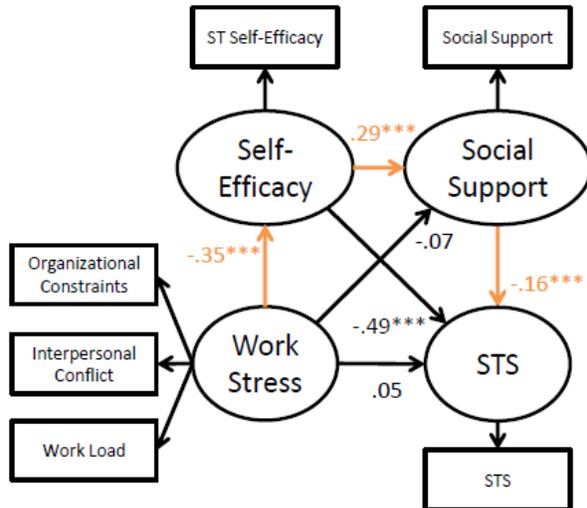


## Next Steps: Mechanism Analysis

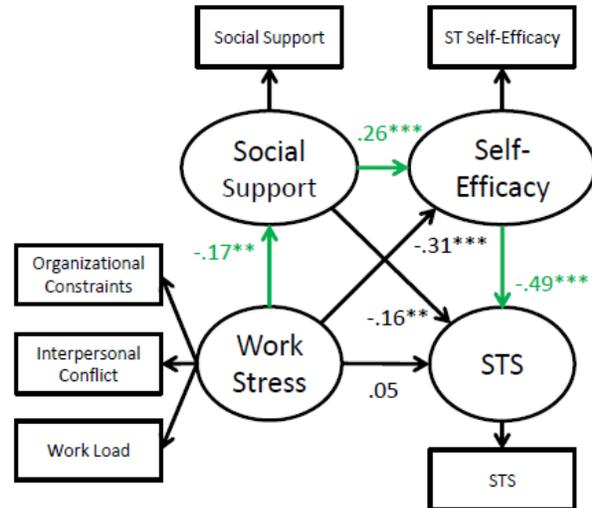


# Cultivation and Enabling Hypotheses

## Cultivation Hypothesis



## Enabling Hypothesis



CFI = .985, RMSEA = .055, SRMR = .039

## Discussion

- STS levels with all major criteria in this sample were significant (19%). Similar to other health providers.
- Several important workplace correlates including appraisal of the indirect exposure, amount of direct exposure, paperwork level, and patient load.
- Mechanisms between demands, resources, and negative outcomes must be determined. Self-efficacy and social support may play key roles.



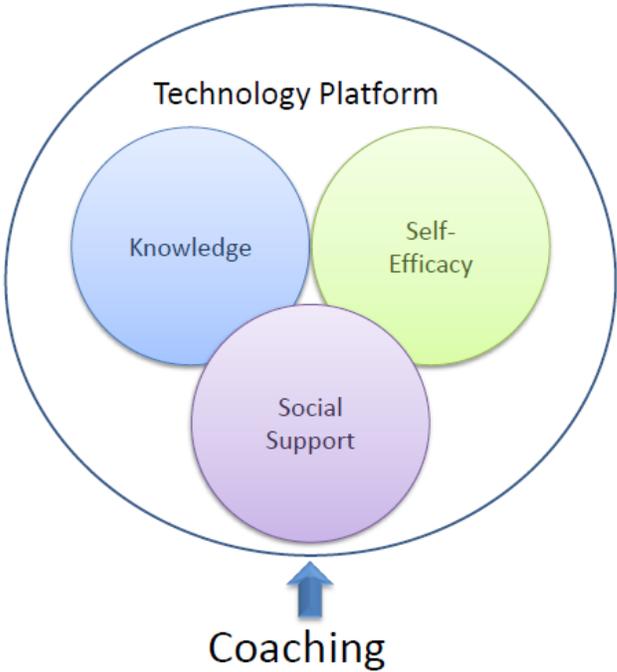
## Interventions

- Implications for supportive interventions that reduce work related demands and increase interpersonal and intrapersonal resources.
- No RCT data exists for military mental health provider secondary trauma/burnout interventions

# SupportNet Project: Intervention Phase



# SupportNet Project



## Caregivers Need Evidenced Based Support Too...





## Appendix 11

## Secondary Trauma Self-Efficacy: Concept and Its Measurement

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The Secondary Trauma Self-Efficacy (STSE) Scale was developed and psychometrically evaluated in 2 studies targeting populations indirectly exposed to traumatic events through work with traumatized clients. Study 1 enrolled behavioral health professionals ( $n = 247$ ) providing trauma therapy for military clients in the United States. Study 2 investigated characteristics of the STSE Scale among health care and social workers ( $n_{11} = 306$ ,  $n_{12} = 193$ ) providing services for trauma victims and survivors in Poland. Rooted in social cognitive theory, the 7-item STSE Scale is used to evaluate perceived ability to cope with the challenging demands resulting from work with traumatized clients and perceived ability to deal with the secondary traumatic stress symptoms. In both studies, exploratory and confirmatory factor analysis showed unidimensionality of the scale. The results indicated good internal consistency of the STSE Scale and its stability over time. STSE correlated highly or moderately with secondary traumatic stress symptoms. Comparatively, associations between STSE and perceived social support, secondary traumatic growth, and negative beliefs about the world and self were either moderate or low. The STSE factor structure and pattern of correlations with the validity measures were invariant across the 2 studies, which indicated that the STSE Scale may be a culturally unbiased instrument.

**Keywords:** secondary traumatic stress, self-efficacy, measurement validity, measurement reliability

*Secondary exposure to trauma* refers to the widespread phenomenon of indirect exposure to different types of traumatic material, such as contacts with people who have experienced traumatic events, exposure to graphic trauma content (e.g., reported by the survivor), exposure to people's cruelty to one another, and observation of and participation in traumatic reenactments (Pearlman & Saakvitne, 1995). Indirect exposure may be an inherent character-

istic of occupations such as mental health, health care, and social work, which involve providing clinical services to traumatized populations (Elwood, Mott, Lohr, & Galovski, 2011). Although indirect (also referred to as *secondary* or *vicarious*) exposure to trauma through work might have a positive effect on service providers' posttraumatic growth (Brockhouse, Msetfi, Cohen, & Joseph, 2011), research suggests that indirect exposure is related to

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higher levels of distress (Pearlman & Maclan, 1995), negative cognitions or low levels of self-trust (Pearlman & Maclan, 1995), and secondary traumatic stress (Elwood et al., 2011).

Secondary traumatic stress is one of the most often investigated negative consequences of indirect exposure to trauma. Although there are many definitions of *secondary traumatic stress*, in this article it is defined as reactions resembling posttraumatic stress, such as intrusive re-experiencing of the traumatic material, avoidance of trauma triggers, and emotions and increased arousal, all resulting from indirect exposure to trauma (Bride, Robinson, Yegidis, & Figley, 2004). Prevalence of secondary traumatic stress varies from 15.2% among social workers (Bride, 2007), 16.3% in oncology staff (Quinal, Harford, & Rutledge, 2009), 19% in substance abuse counselors (Bride, Hatcher, & Humble, 2009), 32.8% in emergency nurses (Dominguez-Gomez & Rutledge, 2009), 34% in child protective services workers (Bride, Jones, & MacMaster, 2007), to 39% in juvenile justice education workers (Hatcher, Bride, Oh, King, & Catrett, 2011).

#### Self-Efficacy as a Protective Factor

In response to the common secondary traumatization exposure and its consequences among several occupational groups, researchers and professionals have advocated for testing protective factors (Elwood et al., 2011; Tyson, 2007). Some individual protective characteristics, such as years of experience as a clinician (Voss Horrell, Holohan, Didion, & Vance, 2011), may be hard to modify. The effectiveness of self-care activities (e.g., leisure time) in reduction or prevention of distress and secondary traumatic stress symptoms is limited (Bober & Regehr, 2006). In contrast, trauma-related cognitions, such as self-efficacy, are modifiable factors that may contribute to posttraumatic adaptation (Ehlers & Clark, 2000).

Self-efficacy is among the cognitions that may be seen as a proximal determinant of health-related outcomes after a traumatic event (Benight & Bandura, 2004). According to social cognitive theory (SCT), self-efficacy mirrors a sense of control over environment and refers to the perceived ability to master challenging demands (such as major stressful events and their aftermath) by means of adaptive actions (Bandura, 1997). Self-efficacy makes a difference in how people feel, think, and act (Bandura, 1997). Recent SCT developments suggest that beliefs about one's own abilities to cope help in overcoming difficulties arising after exposure to a traumatic event (Benight & Bandura, 2004). A systematic review confirmed large significant negative associations between self-efficacy and negative consequences of traumatization, such as posttraumatic stress disorder (PTSD; Luszczynska, Benight, & Cieslak, 2009).

#### Secondary Trauma Self-Efficacy

Although multiple studies have shown that self-efficacy explains posttraumatic adaptation (cf. Luszczynska et al., 2009) and several measures to assess self-efficacy among trauma survivors have been developed (e.g., Hyre et al., 2008; Lambert, Benight, Harrison, & Cieslak, 2012), we found very few studies investigating self-efficacy or other positive cognitions in the context of secondary exposure to trauma and its consequences. We identified only three studies testing for self-efficacy and health outcomes of secondary trauma exposure.

Among professionals who are at risk for vicarious exposure, self-efficacy is associated with better quality of life (Prati, Pietrantonio, & Cicognani, 2010), less compassion fatigue (Ortlepp & Friedman, 2002) and lower levels of secondary traumatic stress (Bonach & Heckert, 2012). It is important to note that those studies assessed work-related self-efficacy, referring to perceptions of training efficiency and perceptions of personal effectiveness at work (Bonach & Heckert, 2012; Ortlepp & Friedman, 2002), or assessed general perceptions of the capability to face various challenges at work (Prati et al., 2010). This work-related approach to measure self-efficacy may be an optimal choice to investigate associations between aggravated job stress levels among workers and global consequences of stress (e.g., quality of life, general distress). In contrast, exploring the role of self-efficacy beliefs in the context of secondary trauma exposure and its potential consequences requires evaluating beliefs about the capability to cope with thoughts and feelings related to secondary trauma exposure. As SCT suggests, contexts of self-efficacy should match the specificity of the environment (e.g., types of stressors) and the outcomes. Such an approach is also in line with the optimal matching hypothesis (Cutrona, 1990), indicating the need for testing the role of social cognitive mediators that match the type of stressor and stress outcomes. Therefore, *secondary trauma self-efficacy* (STSE) is defined in this article as perceived ability to cope with the challenging demands resulting from work with traumatized clients and perceived ability to deal with the secondary traumatic stress symptoms.

#### Aim of the Study

A lack of knowledge about the relationships between self-efficacy and outcomes of secondary trauma exposure among clinical service providers may be due to the fact that no existing measure of self-efficacy is available to assess these relationships. To fill this void, we evaluated the psychometric properties of a newly developed measure of secondary trauma self-efficacy. It was hypothesized that the STSE Scale would have a unidimensional structure, similar to other measures of self-efficacy (e.g., Hyre et al., 2008; Schwarzer & Jerusalem, 1995). In evaluating the congruent validity of the STSE Scale, we expected that STSE would be moderately or strongly associated with secondary traumatic stress symptoms. As for the discriminant validity, we hypothesized that there would be low to moderate correlations between STSE and other secondary trauma-related cognitions, such as (a) perceived social support, (b) negative cognitions about self and the world, and (c) secondary traumatic growth.

Theory and research suggest that self-efficacy relates to other cognitions and social resources that predict health-related outcomes (Benight & Bandura, 2004). Self-efficacy may be enhanced by social support, or it may affect social support seeking, thus, indirectly predicting health-related outcomes (cf. enabling and cultivation hypotheses; Schwarzer & Knoll, 2007). Therefore, the association between STSE and perceived social support would be expected.

Further, most prominent theoretical frameworks explaining PTSD symptoms (e.g., emotional processing theory; Foa & Rothbaum, 1998) assume that negative cognitions about self and the world are key cognitive determinants of the outcomes of the exposure to traumatic stress. However, research has indi-

cated that these negative cognitions operate through other trauma-specific cognitions, such as self-efficacy (Cieslak, Benight, & Lehman, 2008). Therefore, secondary trauma self-efficacy might also be correlated with negative cognitions about self and the world resulting from the indirect exposure to trauma.

Social cognitive theory also implies that strong self-efficacy may enable individuals to identify important opportunities to promote individual growth (Bandura, 1997; Benight & Bandura, 2004). Perceiving positive changes resulting from a struggle with traumatic events and their consequences (Calhoun & Tedeschi, 2006) may represent a positive outcome of posttraumatic adaptation. Perceived posttraumatic growth may be influenced by self-efficacy. In particular, functional outcomes such as perceived growth may develop if survivors start to actively deal with posttraumatic adversities (Zoellner & Maercker, 2006). Such changes and individual growth may occur after secondary trauma (Arnold, Calhoun, Tedeschi, & Cann, 2005). Therefore, it was hypothesized that secondary traumatic growth would be associated with STSE.

## Study 1

### Method

**Participants.** The study was part of a larger project investigating secondary trauma, work-related demands, and resources among mental health care providers working with returning soldiers in the United States. Inclusion criteria for the present study were (a) working at least 1 year as a clinical psychologist, counselor, or social worker; (b) providing services for a military population; and (c) being indirectly exposed to trauma through interaction with patients. Of 312 individuals who responded to any of the items on the STSE Scale, 247 participants (82 men, 33.2%) were qualified for the present study based on the previously described inclusion criteria.

Table 1 displays demographic information of the sample. On average, participants were 48.59 years old ( $SD = 13.02$ ). The sample consisted of clinical psychologists (47.0%), counselors or psychotherapists (29.6%), and social workers (23.5%). Participants experienced indirect exposure to different types of traumatic

**Table 1**  
*Descriptive Statistics for Study 1 and Study 2: Demographics, Means, and Standard Deviations*

Variable	Study 1 ( $n = 247$ )		Study 2, T1 ( $n = 306$ )		Study 2, T2 ( $n = 193$ )	
	<i>M</i> ( <i>SD</i> )	% ( <i>n</i> )	<i>M</i> ( <i>SD</i> )	% ( <i>n</i> )	<i>M</i> ( <i>SD</i> )	% ( <i>n</i> )
<b>Demographic characteristics</b>						
Age (years)	48.59 (13.02)		35.41 (8.59)		35.05 (8.10)	
<b>Gender</b>						
Female		66.8 (165)		75.8 (232)		79.3 (153)
Male		33.2 (82)		23.2 (71)		19.2 (37)
<b>Intimate relationship</b>						
Long-term relationship		75.7 (187)		73.9 (226)		77.2 (149)
Not in a relationship		22.3 (55)		25.5 (78)		22.3 (43)
<b>Highest academic degree</b>						
High school		—		20.6 (63)		18.1 (35)
Associate's degree		4.0 (1)		—		—
Bachelor's degree		4.0 (1)		21.2 (65)		19.7 (38)
Master's degree		44.5 (110)		56.5 (173)		60.6 (147)
Doctorate degree		54.7 (135)		1.0 (3)		0.58 (1)
<b>Profession</b>						
Clinical psychologists		47.0 (116)		—		—
Health care providers		—		48.4 (148)		45.6 (88)
Social workers		23.5 (58)		37.6 (115)		40.9 (79)
Counselors		29.6 (73)		—		—
Other		—		12.3 (38)		11.9 (23)
<b>Measures</b>						
<b>Perceived social support</b>						
Total	5.78 (1.04)		5.01 (1.50)		—	
From family	5.63 (1.30)		4.86 (1.71)		—	
From friend	5.70 (1.20)		4.94 (1.57)		—	
From significant other	6.02 (1.27)		5.23 (1.67)		—	
<b>Negative cognitions</b>						
About world	3.08 (1.24)		—		—	
About self	1.50 (0.68)		—		—	
Secondary traumatic growth	2.36 (1.28)		2.88 (1.08)		—	
Secondary trauma self-efficacy	6.15 (0.72)		5.21 (0.93)		5.28 (0.93)	
<b>Secondary traumatic stress</b>						
Total	1.86 (0.61)		2.31 (0.64)		—	
Intrusion	1.77 (0.58)		2.55 (0.74)		—	
Avoidance	1.89 (0.71)		2.14 (0.65)		—	
Arousal	1.92 (0.71)		2.33 (0.81)		—	

*Note.* Percentages may not add up to 100% due to missing data. T1/T2 = Time 1/Time 2.

events, including, for example, military combat (89.1%), physical assaults (83.6%), motor vehicle accidents (82.6%), and natural disasters (68.0%). Additionally, all participants were also directly exposed to a traumatic event, with the average number of three traumatic events reported per person ( $M = 3.26$ ,  $SD = 1.84$ ).

**Measures.** Participants completed a set of questionnaires evaluating secondary trauma self-efficacy, secondary exposure to trauma, and measures used for the validity assessment.

**Secondary trauma self-efficacy.** The items of Secondary Trauma Self-Efficacy (STSE) Scale were developed in three steps. First, three experimenters (licensed psychologists specializing in secondary trauma issues) conducted structured interviews with 30 behavioral health providers exposed to secondary traumatic stress. The interviews aimed at investigating the beliefs about the ability to deal with work-related secondary exposure. Later, the experimenters screened the measures originally designed to assess perceived ability to cope with demands resulting from the exposure to trauma and perceived ability to deal with PTSD symptoms (Cieslak et al., 2008; Hyre et al., 2008; Lambert et al., 2012). They independently selected up to 12 items, reflecting the self-efficacy statements elicited in the interviews. Seven items were selected by all three experimenters and included in the STSE Scale. The

respective items were modified to measure self-efficacy cognitions in the context of indirect exposure to trauma through work with traumatized individuals. In the next step, the experimenters independently screened the interview records for recurring self-efficacy statements that were not covered by the seven items selected in the previous step. Two additional self-efficacy statements were identified using the consensus method and were added to the STSE Scale.

The preliminary version of the STSE Scale consisted of nine items beginning with the same stem phrase "How capable am I to . . ." followed by the nine items. Participants were asked to relate these items to their "work with people experiencing extreme or traumatic events." The content of the scale is presented in Figure 1. The responses were given on a 7-point Likert-like scale, ranging from 1 (*very incapable*) to 7 (*very capable*).

**Secondary trauma exposure.** The Secondary Trauma Exposure Scale was developed for the present study to measure indirect exposure to traumatic events (Cieslak et al., in press). It consists of a list of 10 potentially traumatic events, including natural disasters, motor vehicle accidents, other serious accidents, physical assaults, sexual assaults, other life-threatening crimes, military combat or exposure to a warzone, life-threatening illness or injury, sudden

#### Secondary Trauma Self-Efficacy Scale

For each situation described below, please rate how capable you are to deal with thoughts or feelings that occur (or may occur) as the result of your work with people experiencing extreme or traumatic events.

Please rate each situation as you CURRENTLY believe.

	Very incapable	Incapable	Somewhat incapable	Neither incapable nor capable	Somewhat capable	Capable	Very capable
	1	2	3	4	5	6	7
"How capable am I to . . ."							
_____							
Deal with my emotions (anger, sadness, depression, anxiety) about working with these people.							
_____							
Find some meaning in what had happened to these people.							
_____							
Control recurring distressing thoughts or images about these people.							
_____							
Deal with thoughts that similar things may happen to me.							
_____							
Be supportive to others after my experiences with these people.							
_____							
Cope with thoughts that I can't handle working these with people anymore.							
_____							
Get help from others to better handle working with these people.							

Figure 1. Secondary Trauma Self-Efficacy Scale. Original item numbers were 1, 3, 4, 5, 7, 8, and 9. Two excluded items were "Deal with the impact these people have had on my life" (Item 2) and "Keep emotional balance after realizing what had happened to these people" (Item 6).

death of someone close, and other. Participants indicated whether they had been exposed to each traumatic event with a *Yes-or-No* format. Additionally, they indicated how many of these potentially traumatic events they had personally experienced.

**Secondary traumatic stress.** The Secondary Traumatic Stress Scale (STSS; Bride, et al., 2004) is a 17-item questionnaire that measures frequency of secondary traumatic stress symptoms in the previous month. It consists of five items for the Intrusion subscale, seven items for the Avoidance subscale, and five items for the Arousal subscale. Participants were instructed to evaluate the frequency of each symptom in the relation to their work with trauma-exposed clients. A 5-point Likert-like scale was used, ranging from 1 (*never*) to 5 (*very often*). Cronbach's alphas for the present study were .94 for the total score, .81 for the Intrusion subscale, .87 for the Avoidance subscale, and .85 for the Arousal subscale.

**Perceived social support.** The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) measures the availability of social support with 12 items. The instruction was adjusted to refer to difficulties occurring at work. The MSPSS consists of four items for the Family subscale, four items for the Friend subscale, and four items for the Significant Other subscale. Participants rated the degree of agreement for each item on a 7-point Likert-like scale, ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Cronbach's alphas for the present study were .94 for the total score, .92 for the Family subscale, .95 for the Friend subscale, and .95 for the Significant Other subscale.

**Negative cognitions.** Posttraumatic Cognition Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999) measures negative cognitions after traumatic events and consists of the Negative Cognitions About the World, Negative Cognitions About Self, and Self-Blame subscales. Based on the original psychometric data (Foa et al., 1999), we used seven items measuring Negative Cognitions About the World and seven items assessing Negative Cognitions About Self. In the modified instruction, respondents were asked to refer to cognitions occurring after the indirect exposure to trauma. The Self-Blame subscale was not used because of ongoing discussion related to its validity and reliability (Startup, Makgekgenene, & Webster, 2007). Participants rated the degree of agreement to each item on a 7-point Likert-like scale, ranging from 1 (*totally disagree*) to 7 (*totally agree*). Cronbach's alphas for the present study were .89 for the total score, .88 for the Negative Cognitions About the World, and .85 for the Negative Cognitions About Self.

**Secondary traumatic growth.** Posttraumatic Growth Inventory–Short Form (PTGI–SF, Cann, et al., 2010) was used to measure positive life changes resulting from indirect exposure to trauma. The original PTGI–SF was a 10-item questionnaire measuring experience of positive change after a particular traumatic event. We modified the instruction asking participants to rate the degree of change as a result of their work with patients who were exposed to traumatic events. A 6-point Likert-like response scale was used, ranging from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very great degree*). Although there are five subscales in the PTGI–SF measuring different types of changes, a total score index is used the most often measure (Cann et al., 2010). Cronbach's alpha in the present study for the total score was .92.

**Demographics.** Demographic questions included the year participants were born, their gender, whether they were in an intimate relationship, their profession, and their highest academic degree (Table 1).

**Procedure.** Potential respondents were contacted via an e-mail containing information about the study and the link to the online survey. Off-post providers, who were located in the civilian community, received the e-mail through an online newsletter sent by TriWest Healthcare Alliance, an organization managing health benefits for military patients and their families. On-post providers, who were located at military installations, received the e-mail from the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, Colorado, and from the Psychology Consultant to the U.S. Army Surgeon General. Respective agencies sent out standard invitation e-mails to all employees who were potential participants and advertised the study in their internal newsletters. The response rate was not available. Informed consents were obtained. The study was approved by the institutional review board (IRB) at the University of Colorado.

**Analytical procedures.** Missing data for all variables were replaced with hot deck imputation (Myers, 2011). The hot deck imputation replaces a missing value with an existing value of another participant in the same group (deck) as the participant with a missing value. The deck is composed of combinations of levels of categorical variables. The use of the hot deck imputation is optimal even if missing values are not completely at random when missing values are less than 10% of all values (Myers, 2011). In total, 0.61% of values were replaced. All of the further analyses were performed on 247 participants.

With gender, intimate relationship status, and profession as categories, Little's missing completely at random (MCAR) tests showed that items were missing completely at random for the following scales: the STSE,  $\chi^2(39) = 19.87, p = .99$ , Secondary Traumatic Growth,  $\chi^2(40) = 40.81, p = .31$ , and the STSS,  $\chi^2(94) = 77.78, p = .89$ . The items of the MSPSS and PTCI were not missing completely at random,  $\chi^2(33) = 55.74, p = .01$ , and  $\chi^2(115) = 178.17, p < .001$ , respectively.

Using the SPSS Statistics (Version 20), the following statistical procedures were applied: (a) interitem correlations to analyze relationships among the STSE Scale items to eliminate items whose correlations with each other were too high or too low; (b) a principal component analysis to explore possible dimensions of the STSE Scale; (c) Cronbach's alpha to assess internal consistency reliability; (d) confirmatory factor analysis to test hypothesized unidimensionality of the scale; (e) corrected item-total correlations and Pearson's correlations to test the relationships among STSE and the measures selected to establish validity of the new instrument; and (f) a principal components analysis to examine discriminant validity (Clark & Watson, 1995) of the STSE.

The confirmatory factor analysis was performed with AMOS (Version 20). The maximum likelihood was used as an estimation method. Because univariate nonnormality and multivariate nonnormality were diagnosed, a bootstrap procedure was performed with 1,000 bootstrap samples (Byrne, 2009). Three conventional goodness-of-fit indices (Byrne, 2009) were used to evaluate global model fit: root-mean-square error of approximation (RMSEA), comparative fit index (CFI), and standardized root-mean residual (SRMR).

## Results

**Preliminary analyses.** Corrected item-total correlations were high (Item 1:  $r = .75$ , Item 2:  $r = .77$ , Item 3:  $r = .61$ , Item 4:  $r = .75$ , Item 5:  $r = .66$ , Item 6:  $r = .74$ , Item 7:  $r = .68$ , Item 8:  $r = .58$ , and Item 9:  $r = .65$ ; all  $ps < .001$ ). Pearson's correlations were computed among nine items of the STSE Scale. Results of the correlations revealed that the correlation between Item 1 and Item 2 was high,  $r(245) = .82$ . This high correlation indicated that these two items may have measured the same aspect of secondary trauma self-efficacy. Therefore, Item 2, "Deal with the impact these people have had on my life," was dropped from further analyses because it was a more general statement than Item 1. After Item 2 was removed from the STSE Scale, Item 6, "Keep emotional balance after realizing what had happened to these people," had high correlations with Items 4, 5, and 7, all  $rs > .65$  ( $ps < .001$ ), in addition to a relatively higher corrected item-total correlations with remaining items. These high correlations indicated that Item 6 shared a high percentage of the variance with these three items specifically. Therefore, Item 6 was dropped from further analyses, resulting in seven items on the STSE Scale. The final version of the instrument is presented in Figure 1. Corrected item-total correlations for the seven-item version ranged from .53 to .79. Sample distribution analyses showed that the data were negatively skewed for all items, with the distribution differing significantly from normal ( $ps < .001$ ).

**Exploratory and confirmatory analysis.** A principal components analysis was performed to explore the component structure of the seven items included in the STSE Scale. The analysis extracted one component accounting for 56.89% of the variance (eigenvalue = 3.98) on a basis of the eigenvalue greater than 1 for inclusion of a component. Factor loadings of the items ranged between .71 and .83.

A confirmatory factor analysis for a one-factor unconstrained model showed relatively poor model-data fit, RMSEA = .116, 90% lower and upper confidence limits [.087, .147]; CFI = .936; and SRMR = .047. Modification indices showed that error variances of Items 4 and 5 should covary. The modified model presented good fit with RMSEA of .071, 90% lower and upper confidence limits [.037, .106]; CFI of .978; and SRMR of .036. In sum, the results indicated that the seven-item STSE Scale consisted of one component.

A confirmatory factor analysis conducted with the bootstrapping yielded similar fit indices and factor loadings, and therefore suggested good model-data fit. Additional analyses showed that model-data fit was poor (with RMSEA values above .10) when confirmatory factor analyses were conducted for eight-item and nine-item versions of the STSE Scale, with two previously excluded items (2 and 6) taken into account.

**Reliability and validity analyses.** Internal consistency of the seven-item STSE Scale was  $\alpha = .87$ , which suggests good reliability. To examine validity of the STSE scale, we computed Pearson's correlations among STSE and theoretically relevant constructs (i.e., secondary traumatic stress, social support, secondary traumatic growth, negative cognitions). As expected, STSE was negatively correlated with secondary traumatic stress and negative cognitions (cf. Table 2), with 29.2% shared variance. Consistent with our expectation, STSE was positively correlated with social support. There was a small significant positive correlation between STSE and secondary traumatic growth. Results of partial correlation analyses (with the number of direct trauma exposures controlled) indicated that the associations between STSE and the other study variables remained significant and similar in size (Table 2).

**Table 2**  
*Pearson's Correlations Among the Study Variables*

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. STSE		.23***	.24***	.26***	.20***	-.64***	-.49***	-.60***	-.61***	.13*				.04
2. Support: Total	.32***		.89***	.90***	.93***	-.17**	-.07	-.22***	-.15*	.13*				.04
3. Support: Family	.27***	.87***		.67***	.75***	-.17**	-.03	-.23***	-.16**	.14*				.02
4. Support: Friends	.32***	.80***	.54***		.79***	-.17**	-.10	-.20**	-.15*	.10				.04
5. Support: Others	.23***	.85***	.63***	.49***		-.12**	-.06	-.16**	-.10	.10				.06
6. STSS: Total	-.54***	-.33***	-.30***	-.29***	-.24***		.83***	.89***	.95***	-.05				.07
7. STSS: Intrusion	-.43***	-.21**	-.18**	-.22***	-.13*	.87***		.52***	.73***	.07				.07
8. STSS: Avoidance	-.54***	-.39***	-.36***	-.33***	-.28***	.94***	.71***		.79***	-.16**				.08
9. STSS: Arousal	-.51***	-.28***	-.23***	-.24***	-.23***	.94***	.77***	.83***		-.03				.04
10. Secondary traumatic growth	.14*	.14*	.13*	.12*	.10	.10	.13*	.06	.12*					.05
11. Negative cognitions: World	-.32***	-.30***	-.29***	-.28***	-.20***	.47***	.34***	.49***	.45***	-.08				
12. Negative cognitions: Self	-.51***	-.39***	-.37***	-.33***	-.30***	.56***	.40***	.57***	.53***	-.10	.52***			
13. Direct trauma exposure	.05	-.11	-.12	-.01	-.13*	.19**	.05	.21***	.22***	.10	.16*	.04		
14. STSE*		.38***	.30***	.35***	.30***	-.55***	-.40***	-.54***	-.52***	.16*	-.32***	-.49***		

*Note.* Correlations in upper diagonal region show values for Polish data (Study 2). Correlations in lower diagonal region show values for U.S. data (Study 1). STSE = Secondary Trauma Self-Efficacy; Support = Perceived Social Support Scale scores; STSS = Secondary Traumatic Stress Scale; Direct trauma exposure in Study 1 represents the number of direct trauma experiences; direct trauma exposure in Study 2 represents whether participants have experienced any of direct traumatic events (with direct exposure dummy coded using 0 = no and 1 = yes).

\* Direct exposure partialled out.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

To examine discriminant validity of the STSE Scale, we performed a principal components analysis with the seven items of the STSE Scale and the randomly selected seven STSS items. Based on eigenvalue greater than 1 as the inclusion criterion, we identified two components accounting for a total of 55.82% of the variance (eigenvalue = 7.81). One component consisted of the seven items of the STSE Scale (factor loadings ranging from .69 to .80), and the other component consisted of the seven STSS items (factor loadings ranging from .51 to .84).

## Study 2

The results of Study 1 provided preliminary support for validity and reliability of the STSE Scale, as well as for its unifactorial structure. As data were collected cross-sectionally, the time stability of the scale was not tested. Moreover, participants worked with a specific population (i.e., traumatized military patients). A longitudinal cross-validation study conducted in a different sample of professionals (i.e., indirectly exposed to civilian-related traumas) was needed. To rectify these limitations, we designed Study 2 to longitudinally evaluate the psychometric properties of the STSE Scale among workers providing services to traumatized civilian population within a different cultural context (in Poland). Extending the findings of Study 1, Study 2 provided a cross-cultural cross-validation study.

## Method

**Participants.** Health care and social workers providing services for civilian survivors of traumatic events participated in the research. The study was a part of a larger investigation focusing on determinants of how job demands and resources contribute to development of secondary traumatic stress. Inclusion criteria for the present study were (a) working at least 1 year as a health care provider (nurse or paramedic) or social worker; (b) providing services for a civilian population suffering from trauma; and (c) being indirectly exposed to trauma through interaction with patients or clients. Of 309 participants, three participants were excluded because they reported having no exposure to potential secondary traumatic events; this resulted in a sample of 306 participants (71 men, 23.2%). Table 1 displays demographic information of the sample. The mean age was 35.41 years old ( $SD = 8.59$ ) at Time 1. The sample consisted of 148 health care providers (48.4%), 115 social workers (37.6%), and 39 other professionals (12.3%). A lower average education level among Study 2 participants compared with those in Study 1 resulted from the differences in the occupations and the national regulations pertaining to the academic degree required for registered practice. In particular, 47% of Study 1 participants were clinical psychologists, who are required to have a doctorate degree in order to practice, whereas the majority of Study 2 participants were nurses and social workers who are required to have a bachelor's or master's degree in order to practice their profession. Participants were indirectly exposed to different types of traumatic events at work, including life-threatening illness or injury (88.9%); physical assault (87.3%); sudden, unexpected death of someone close (82.7%); transportation accident (73.2%); natural disaster (30.1%); or military-related trauma (9.5%). Additionally, 75% of respondents reported that they experienced a direct exposure to traumatic event

at least once. The number of direct exposures to trauma was not assessed.

Of those 306 participants who completed the Time 1 assessment, 193 (37 men, 19.2%) took part in Time 2 measurement (see Table 1 for demographics). Attrition analysis showed no significant differences between completers and dropouts in terms of age, items of the STSE Scale, and the STSE Scale total score ( $t_s < 1.47$ ,  $ns$ ), as well as relationship status and education ( $\chi^2_s < 4.78$ ,  $ns$ ). However, compared with dropouts, completers were more often women and social workers,  $\chi^2 > 4.45$ ,  $p < .05$ . The mean age for Time 2 was 35.41 years ( $SD = 8.59$ ). The sample for Time 2 consisted of 88 health care providers (45.6%), 79 social workers (40.9%), 23 others (11.9%), and three respondents who did not provide information about their profession (1.6%).

**Measures.** Participants completed the same set of measures as in Study 1, such as (a) Secondary Trauma Self-Efficacy Scale ( $\alpha = .88$ ); (b) Secondary Trauma Exposure Scale; (c) Secondary Traumatic Stress Scale ( $\alpha_s = .93$  for a total score and .79 for Intrusion, .85 for Avoidance, and .87 for Arousal Symptoms subscales); (d) Multidimensional Scale of Perceived Social Support ( $\alpha_s = .96$  for a total score and .96 for Support From Family, .96 for Support From Friends, and .93 for Support From Significant Others subscales); and the short form of the Posttraumatic Growth Inventory ( $\alpha = .92$ ). The Secondary Trauma Exposure Scale in Study 2 assessed whether participants have experienced directly any of the 10 traumatic events. The scale measuring the negative cognitions about the world and self was not included. The Polish versions of the scales were prepared using back-translation procedures. As in Study 1, participants were asked to respond to the items in the context of work-related indirect exposure to trauma.

**Procedure.** Data were collected with a web-based survey. The following recruitment strategies were applied: distribution of leaflets and a public presentation of the study during the annual national meetings of professional organizations, advertisements in specialist journals reaching all registered professionals, and information posted on web sites for specialists and practitioners (mental health professionals, nurses, doctors, and emergency and social services workers) working with traumatized clients. Those who were interested were informed about the study aims; they then provided informed consent and filled out the questionnaires. Six months later, respondents received an e-mail invitation to take part in Time 2 measurement. The mean time elapsed between Time 1 and Time 2 surveys was 162.26 days ( $SD = 39.35$ ). Personal identification codes were used to secure anonymity. The study was approved by the IRB at the first authors' home institution in Poland.

**Analytical procedures.** As in Study 1, missing data were replaced using the hot deck imputation method (Myers, 2011). In total, 1.59% values were replaced. The Little's MCAR tests indicated that items were missing completely at random for the following scales: the STSE Scale at Time 1,  $\chi^2(16) = 18.22$ ,  $p = .31$ ; the STSE Scale at Time 2,  $\chi^2(30) = 32.92$ ,  $p = .32$ ; the MSPSS,  $\chi^2(98) = 115.81$ ,  $p = .11$ ; and the STSS,  $\chi^2(193) = 217.20$ ,  $p = .11$ . The PTGI items were not missing completely at random,  $\chi^2(53) = 80.06$ ,  $p = .01$ .

Cronbach's  $\alpha$  served as the index of internal consistency reliability. Pearson's correlation was used to assess test-retest reliability by correlating Time 1 and Time 2 STSE scores and to test validity of the scale by correlating STSE with the relevant con-

structs. We performed the exploratory and confirmatory factor analyses using the same procedure, software, and interpretation criteria as in Study 1.

## Results

**Preliminary analyses.** Table 1 displays means and standard deviations of all variables. In line with Study 1, Items 2 and 6 were removed from nine-item version of the STSE Scale, and the seven-item version was used for further analysis. Pearson's correlations among nine items of the STSE Scale (Time 1) showed that the correlation between Items 1 and 2 was high,  $r(304) = .81, p < .001$ , and that Item 6 was highly correlated with Items 4, 5, and 7,  $r_s > .68$ . Sample distribution showed that Items 1, 3, 4, and 7 were normally distributed, and Items 5, 8, and 9 were mildly and negatively skewed, with the distribution differing significantly from normal ( $ps < .001$ ).

**Exploratory and confirmatory factor analysis.** Using the data obtained from 306 participants, we performed the principal components analysis to explore possible dimensions of the STSE Scale (Time 1). The analysis extracted only one component accounting for 61.87% of the variance (eigenvalue = 4.33). Factor loadings for the seven items ranged between .64 and .87.

The confirmatory factor analysis was performed to further evaluate the parameter estimates and model fit of the one-factor solution of the STSE Scale. In line with Study 1, error variances of Items 4 and 5 were assumed to covary. The analysis, conducted for 306 participants, suggested good model-data fit with RMSEA = .050, 90% lower and upper confidence limits [.008, .083], CFI = .991, and SRMR = .023. These results showed that the STSE Scale consisted of one primary component.

**Reliability and validity of the STSE scale.** Internal consistency of the STSE Scale was assessed at both time points. Cronbach's alpha values were .89 at Time 1 and .88 at Time 2, indicating good internal consistency. Test-retest reliability was examined on the sample of 193 participants who completed the STSE Scale at both measurement points (165-day period). The association between the STSE scores at Time 1 and Time 2 was high,  $r(191) = .65, p < .001$ .

Table 2 displays correlations among STSE at Time 1 and theoretically relevant constructs. As expected, STSE was negatively correlated with secondary traumatic stress. Consistent with the hypotheses and the results of Study 1, STSE was positively

correlated with social support. In line with the results of Study 1, STSE and secondary traumatic growth were positively associated, although the correlation was small. Results of partial correlations (with direct trauma exposure controlled) indicated that associations between STSE and the other study variables remained significant and similar in size (Table 2). Across the study variables, participants exposed to trauma directly did not differ from those without a direct exposure (all  $F_s < 1.93, ps > .168$ ).

**Factor model invariance.** A two-group model representing the respective samples was tested in order to evaluate if the one-factor structural model tested in Study 1 and Study 2 was invariant across the U.S. ( $n = 247$ ) and Polish ( $n = 306$ ) samples. Because of multivariate nonnormality, the bootstrap procedure was performed (Byrne, 2009). Table 3 displays the goodness-of-fit statistics for the two-group model. Compared with the unconstrained model (see Model 1, Table 3), the model with factor loadings, variances, and the covariance constrained to be equal in both groups (Model 2, Table 3) differed significantly in terms of fit indices,  $\Delta\chi^2(15) = 90.02, p < .001$ . Therefore, Model 2 was rejected. Further, the model with error variances constrained to be equal for two groups (Model 4, Table 3) was also rejected,  $\Delta\chi^2(9) = 76.91, p < .001$ .

Further analyses showed that the nested model with factor loadings constrained to be equal across both groups (Model 3, Table 3) did not differ from the unconstrained model,  $\Delta\chi^2(6) = 10.69, ns$ , and therefore Model 3 should be accepted. Additionally, the model with the covariance constrained to be equal in both groups (Model 5, Table 3) did not differ from the unconstrained model,  $\Delta\chi^2(1) = 0.40, ns$ , and therefore Model 5 should be accepted. Based on these results, the final model with factor loadings and the covariance constrained to be equal across both groups (Model 6; Table 3) was compared with the unconstrained model. The results indicated that the final model did not differ from the unconstrained model,  $\Delta\chi^2(7) = 10.72, ns$ , and therefore Model 6 may be accepted as the final model. Factor loadings of the items in the final model are displayed in Figure 2.

### Differences in associations across Study 1 and Study 2.

Across both studies, similar Pearson's correlations were found among STSE Scale and the following indices: Perceived Social Support-total score,  $z = 1.13, p = .26$ ; Perceived Support From Family,  $z = 0.37, p = .71$ ; Perceived Support From Friends,  $z = 0.76, p = .44$ ; Perceived Support From Significant Others,  $z =$

**Table 3**  
Goodness-of-Fit Statistics for Tests of Invariance of Factor Structure for Study 1 and Study 2

Model Description	$\chi^2$	$\chi^2/df$	RMSEA	CFI	SRMR	GFI	NFI	$\Delta\chi^2$	$\Delta NFI$
1. Hypothesized model (unconstrained)	51.19	2.01	.043	.986	.036	.974	.972	—	—
2. Factor loadings, variances, and covariance constrained to be equal	142.20	3.47	.067	.945	.068	.937	.925	90.02***	.048
3. Factor loadings constrained to be equal	62.87	1.97	.042	.983	.045	.969	.967	10.69	.006
4. Variances constrained to be equal	129.10	3.69	.070	.949	.053	.942	.932	76.91***	.041
5. Covariance constrained to be equal	52.59	1.95	.041	.986	.036	.974	.972	0.40	.000
6. Factor loadings and covariance constrained to be equal (final model)	62.91	1.91	.041	.984	.045	.969	.967	10.72	.006

*Note.* The  $\Delta\chi^2$  indicates a change in a chi-square statistic from the hypothesized model; *df* = degrees of freedom. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; SRMR = standardized root-mean-square residual; GFI = goodness-of-fit index; NFI = normed fit index. \*\*\*  $p < .001$ ; A significant  $\Delta\chi^2$  value indicates that the model was not a good fit for the hypothesized model.

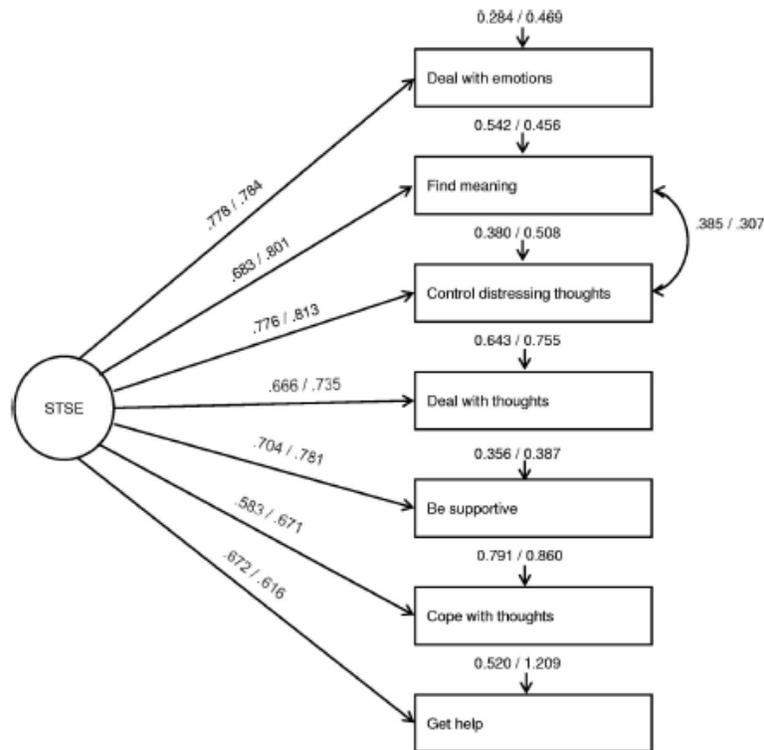


Figure 2. Final two-group confirmatory factor analysis model of the Secondary Trauma Self-Efficacy Scale. Standardized regression weights (i.e., factor loadings), variances, and correlations between error variances are presented. In the final model, factor loadings and covariance are constrained to be equal in Study 1 and Study 2. Numbers before the slash refer to Study 1; numbers after the slash refer to Study 2. STSE = Secondary Trauma Self-Efficacy. Full list of the STSE Scale items presented in Figure 1. All parameters significant at  $p < .001$ .

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0.37,  $p = .71$ ; Secondary Traumatic Stress—total score,  $z = 1.79$ ,  $p = .07$ ; Secondary Traumatic Stress—Intrusion subscale,  $z = 0.89$ ,  $p = .38$ ; Secondary Traumatic Stress—Avoidance subscale,  $z = 1.04$ ,  $p = .30$ ; Secondary Traumatic Stress—Arousal subscale,  $z = 1.70$ ,  $p = .08$ ; and Secondary Traumatic Growth,  $z = 0.12$ ,  $p = .91$ . In sum, the associations found in the two studies (Table 2) did not differ significantly.

### General Discussion

Our studies evaluated the characteristics of the Secondary Trauma Self-Efficacy (STSE) Scale, a measure designed to capture beliefs about the ability to deal with barriers associated with secondary exposure to trauma. This short seven-item scale tackles the barriers of tasks at work (including providing services to trauma survivors), but it also refers to controlling emotional and cognitive reactions related to the indirect exposure. Compared with other measures of self-efficacy that were previously applied in the

context of exposure to secondary trauma, the STSE Scale is specific to challenges posed by the indirect exposure to trauma, including environmental (i.e., work-related) and individual (cognitive and emotional) demands. As proposed in SCT, self-efficacy beliefs, which make a difference in specific stressful situations, should closely reflect the demands related to this situation (cf. Bandura, 1997). Further, in line with optimal matching hypothesis (Cutrona, 1990), the scale matching both stressful demands and stress outcomes may offer the best approach to investigating self-efficacy related to secondary exposure.

Results of the present studies supported the one-factor structure of the STSE Scale and its good reliability. Factor analyses comparing the two language versions indicated the invariant structure of the scale. Such structure is in line with SCT, assuming that self-efficacy is a one-dimensional construct (Bandura, 1997). Unifactorial structure of other types of self-efficacy, such as general self-efficacy or self-efficacy referring to coping with one's own

trauma, were also confirmed in studies testing psychometric characteristics of other self-efficacy measures (Hyre et al., 2008; Lambert et al., 2012; Schwarzer & Jerusalem, 1995). Further, self-efficacy referring to secondary trauma, measured with the STSE Scale, showed high stability over 6 months. According to SCT, moderate to high stability may be expected, because self-efficacy may fluctuate over time due to mastery experiences over environmental and intrapersonal challenges (Bandura, 1997). In sum, the results provide evidence for good psychometric properties of the scale and verify its theoretically assumed structure.

In both studies, secondary trauma self-efficacy was related to the selected constructs, as hypothesized. The negative associations between STSE and secondary traumatic stress were significant and moderate, indicating that beliefs about ability to deal with challenges related to secondary trauma exposure are important in predicting lower levels of secondary traumatic stress. The size of correlation coefficients corresponds to associations between self-efficacy and health outcomes reported in meta-analyses dealing with survivors of primary trauma (Luszczynska et al., 2009). In the only other study testing for associations between secondary traumatic stress and self-efficacy (Bonach & Heckert, 2012), researchers applying a measure of efficacy that referred to respondents' own role and efficiency at work found weak associations, and only 1% of secondary traumatic stress variance was explained. In contrast, self-efficacy measured with STSE Scale explains 23%–39% of variance in secondary traumatic stress. In conclusion, the STSE Scale showed a potential to help explain the psychological distress process among workers exposed to secondary trauma.

The correlations between secondary trauma self-efficacy and other trauma-related cognitions such as negative cognitions about self and about the world (Foa & Rothbaum, 1998) and secondary traumatic growth were significant (higher self-efficacy was associated with less negative cognitions and with higher growth) and in the low to moderate range. Therefore, the amount of variance shared between these variables was not high, confirming that STSE and other constructs are distinct aspects of cognitive functioning after secondary exposure to trauma. Similar strength of associations between self-efficacy and cognitions about self and the world was found in research dealing with victims of primary exposure to trauma (Cieslak et al., 2008). We have identified no other study showing associations between self-efficacy and cognitions about self and the world in the context of secondary trauma exposure; therefore, our findings provide a preliminary novel evidence for the interplay between positive and negative cognitions among professionals exposed to secondary trauma. Future research should investigate if these general negative cognitions operate through trauma-specific cognitions, such as STSE.

Finally, secondary trauma self-efficacy measured with the STSE Scale was moderately related to higher levels of social support from family, friends, and other significant sources. The findings are in line with posttraumatic adaptation model assuming that social resources should foster self-efficacy beliefs (Benight & Bandura, 2004) as well as in line with models explaining associations between social support and cognitions (Schwarzer & Knoll, 2007). Further, models explaining factors affecting practitioners working with clients exposed to trauma focused solely on support from work-related sources (cf. Voss Horrell et al., 2011). Our findings suggest that support from sources outside work may also play a relevant role. As two previous studies accounting for self-

efficacy and social support among professionals exposed to secondary trauma did not test for the associations between these constructs (Bonach & Heckert, 2012; Ortlepp & Friedman, 2002), no comparison between our results and previous research can be made. Our findings, therefore, provide novel preliminary evidence for the relationship between self-efficacy and support from sources outside work.

In sum, the present research provides evidence for the validity of the STSE Scale. All hypothesized associations of secondary trauma self-efficacy with the secondary traumatic stress, negative cognitions, secondary traumatic growth, and perceived social support were confirmed. The sizes of correlation coefficients were similar in both language versions of the STSE Scale. Future studies are needed to further evaluate whether the STSE Scale is a superior predictor of adaptation after secondary exposure to trauma, compared with other measures of self-efficacy, such as general self-efficacy (Schwarzer & Jerusalem, 1995) or work-related efficacy (Bonach & Heckert, 2012).

The strength of our research lies in testing the STSE Scale properties in two different contexts. Similar patterns of associations emerged from data collected in the United States and Poland, and the two language versions showed similar psychometric properties. The findings were similar for workers exposed to civilian-related secondary trauma and those who were exposed to secondary trauma through providing services to military personnel. These results indicate that the STSE Scale is a robust measure and allow for a preliminary conclusion that secondary trauma self-efficacy may have similar properties and operate similarly across different cultural contexts. Further research is needed to investigate individuals in different types of occupations, such as oncology nurses or juvenile justice education workers, who may suffer from relatively high levels of secondary traumatic stress (Bride et al., 2007; Dominguez-Gomez & Rutledge, 2009; Hatcher et al., 2011).

The utility of the STSE Scale in secondary trauma experiences that are unrelated to work, such as secondary trauma exposure reported by partners of cancer patients or spouses of military service members, may be low. Three items of the STSE Scale refer to barriers experienced due to working with traumatized individuals. Further, a reference to interaction with other people at work may not be ideal in case of some professionals exposed to secondary trauma, such as clergy members (Hendron, Irving, & Taylor, 2012). The phrase "working with these people" could be replaced with "interacting with these people," but other versions of the STSE Scale with language adjustments would require additional psychometric evaluations.

Our research has some limitations. Data were collected among relatively heterogeneous samples, but several occupational groups that may suffer from relatively high secondary traumatic stress were not included (e.g., emergency nurses or juvenile justice system workers; Dominguez-Gomez & Rutledge, 2009; Hatcher et al., 2011). Although both studies applied multiple recruitment strategies in order to reach diverse target populations, these are both convenience samples. Future research needs to account for the representativeness of the samples.

The utility of the STSE Scale was not compared with the utility of other measures of self-efficacy. The instructions in the original measures assessing social support, growth, and negative cognitions were modified in order to tackle participants' functioning in the context of work-related secondary exposure. Changing more gen-

eral measures (i.e., referring to any type of trauma exposure or any type of stressful event) into specific measures by means of narrowing down the instructions might inflate the observed associations between the constructs. The number of situations of direct exposure to traumatic events was not evaluated in Study 2. Future research needs to account for other occupational groups, different types of self-efficacy, and other stress outcomes, such as job burnout or diminished quality of life. Studies aiming at further psychometric evaluation of the STSE Scale may consider including additional items to assure that the STSE concept is covered in a sufficiently broad way. On the other hand, short versions of the STSE Scale may be needed for multivariate investigations. Future studies need to clarify how the secondary trauma self-efficacy construct may operate and whether it influences practitioners' well-being and their effectiveness at work. Developing a psychometrically sound measure of the secondary trauma self-efficacy was an essential step preceding research on evaluating mechanisms and the effects of secondary trauma self-efficacy.

The present study investigated the properties of a new measure of self-efficacy, referring to coping with secondary trauma experiences. The data collected among professionals working with civilians and military trauma victims indicated good psychometric characteristics of the STSE Scale and its invariance for two language versions. The interest in research on secondary traumatic stress is growing as organizations and practitioners call for identifying protective factors (Elwood et al., 2011; Tyson, 2007; Voss Horrell et al., 2011). Secondary trauma self-efficacy may constitute one of the key protective individual resources, promoting well-being and operating in concert with other individual and environmental resources (Luszczynska et al., 2009). Our research proposes a new measure to assess this personal resource.

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## Appendix 12

## Secondary Traumatic Stress Among Mental Health Providers Working With the Military

### *Prevalence and Its Work- and Exposure-Related Correlates*

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**Abstract:** Our research assessed the prevalence of secondary traumatic stress (STS) among mental health providers working with military patients. We also investigated personal, work-related, and exposure-related correlates of STS. Finally, using meta-analysis, the mean level of STS symptoms in this population was compared with the mean level of these symptoms in other groups. Participants ( $N = 224$ ) completed measures of indirect exposure to trauma (i.e., diversity, volume, frequency, ratio), appraisal of secondary exposure impact, direct exposure to trauma, STS, and work characteristics. The prevalence of STS was 19.2%. Personal history of trauma, complaints about having too many patients, and more negative appraisals of the impact caused by an indirect exposure to trauma were associated with higher frequency of STS symptoms. A meta-analysis showed that the severity of intrusion, avoidance, and arousal symptoms of STS was similar across various groups of professionals indirectly exposed to trauma (e.g., mental health providers, rescue workers, social workers).

**Key Words:** Secondary traumatic stress, indirect exposure to trauma, mental health providers, military trauma.

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The rates of posttraumatic stress disorder (PTSD) among the US military and veterans across studies range from a current prevalence of 2% to 17% to a lifetime prevalence of 6% to 31% (Richardson et al., 2010). These rates are higher than in the general US population, in which the current prevalence is 3.5% (Kessler et al., 2005) and the lifetime prevalence is 6.8% (Kessler et al., 2005). The numbers of military or veteran patients seeking mental health care have grown drastically in recent years. The Department of Veterans Affairs (VA) alone has observed a 200% increase in the number of patients with PTSD receiving behavioral health services, from 139,062 in 1997 to 279,256 in 2005 (Rosenheck and Fontana, 2007). With a growing need for treatment, the VA alone added 4,330 mental health professionals to its workforce (Voss Horrell et al., 2011). These statistics show that the population affected indirectly by trauma, through providing services for traumatized patients, is growing rapidly. Given the exponential increase in clinical need and potential for secondary exposure by military mental health providers, the

purposes of this investigation were threefold: a) to explore the prevalence of secondary traumatic stress (STS) among mental health providers working with military patients and to compare the severity of STS symptoms in this population with other mental health providers; b) to test the relationship between indirect exposure to trauma and STS; and c) to investigate the possible correlates of STS. These aims were achieved through a two-study approach, with study 1 focusing on the prevalence and correlates of STS and study 2 conducting a meta-analysis to compare our sample prevalence with other indirectly exposed samples.

### Psychosocial Effects of Indirect Trauma Exposure Across Occupational Groups

Whereas most studies examining the effects of PTSD have focused on trauma survivors or victims, information about the effect on providers delivering trauma treatment is more limited. Indirect (also called vicarious or secondary) exposure to trauma through work with traumatized patients might have a positive effect on providers' posttraumatic growth (Brockhouse et al., 2011), but it is also predictive of higher distress (Pearlman and Mac Ian, 1995), increased negative cognitions (e.g., low level of self-trust; Pearlman and Mac Ian, 1995), and higher job burnout (Ballenger-Browning et al., 2011).

Most studies investigating the negative effects of indirect trauma exposure on mental health providers have focused on a set of conceptually overlapping outcomes. These include vicarious traumatization (McCann and Pearlman, 1990), compassion fatigue (Figley, 2002), and STS (Bride et al., 2004). The ongoing discussion about the similarities and the differences between these concepts (Jenkins and Baird, 2002) shows that their definitions share one or more of the following components: indirect exposure to a traumatic material, PTSD symptoms, and negative shifts in therapists' cognitive schema. STS is usually associated with therapists' PTSD-like reactions, such as intrusive re-experiencing of the traumatic material, avoidance of trauma triggers and emotions, and increased arousal, all resulting from indirect exposure to clients' trauma (Bride et al., 2004). *Compassion fatigue* is defined as reduced empathic capacity or client interest manifested through behavioral and emotional reactions from exposure to traumatizing experiences of others (Adams et al., 2006). Finally, *vicarious trauma* is the negative cognitive shift in therapists' worldview (McCann and Pearlman, 1990).

The incongruities in these definitions have led to some research discrepancies on the consequences of indirect trauma exposure and have also hindered cross-sample comparisons. This study used the term *secondary traumatic stress* to measure the indirect exposure to clients' trauma material that leads to the providers' PTSD-like symptoms of re-experiencing, avoiding, and hyperarousal, corresponding with criteria B, C, and D, respectively, of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)*, American Psychiatric Association [APA], 2000).

Prevalence of STS differs across studies and occupation groups. For example, when measured with the Secondary Traumatic

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Stress Scale (STSS; Bride et al., 2004), *DSM-IV-TR* (APA, 2000) criteria B, C, and D for a PTSD-like diagnosis of STS were met by 15.2% of social workers (Bride, 2007), 16.3% of oncology staff (Quinal et al., 2009), 19% of substance abuse counselors (Bride et al., 2009), 20.8% of providers treating family or sexual violence (Choi, 2011a), 32.8% of emergency nurses (Dominguez-Gomez and Rutledge, 2009), 34% of child protective services workers (Bride et al., 2007), and 39% of juvenile justice education workers (Smith Hatcher et al., 2011). There is no estimation of the prevalence of STS among mental health specialists providing treatment for military and veteran patients. In addition, we were unable to identify any research on severity of the intrusion, avoidance, and arousal symptoms in this specific group of providers. Therefore, the present study aimed at identifying STS prevalence and symptom severity among mental health providers working with military patients.

Using a meta-analytic approach, we aimed to compare the severity of the STS symptoms identified in the present study sample with the severity of these symptoms among other populations offering services to traumatized clients. Because the discrepancies between studies testing the prevalence of STS may result from applying different assessment methods, prevalence meta-analysis should compare data collected with the same measure (e.g., the STSS; Bride et al., 2004).

### The Complexity of Indirect Exposure to Trauma

The next aim of this study was to investigate the basic assumption that indirect exposure to traumatic events is a critical factor in the development of STS symptoms. Whereas measuring direct exposure to trauma is a standard approach in studies on PTSD, many studies on STS focus more on the PTSD-like symptoms, reflecting *DSM-IV-TR* criteria B, C, and D for a PTSD diagnosis (APA, 2000), and pay less attention to the indirect exposure (criterion A1) hypothetically causing these symptoms. Moreover, even if a measure of indirect exposure is used in a study, it is often analyzed as a dichotomous or one-dimensional variable, usually referring to duration of work with traumatized patients (Devilly et al., 2009; Galek et al., 2011).

Assuming that exposure to trauma patients is a one-dimensional construct may partially explain the inconsistencies in research on the associations between indirect trauma exposure and STS (Sabin-Farrell and Turpin, 2003). To clarify which aspects of the exposure may be relevant for STS, we accounted for four indices of indirect trauma exposure in mental health providers: diversity, volume, frequency, and ratio. Diversity reflected the variety of indirect trauma exposure and allows for determining whether a provider treats patients for PTSD caused by one type of traumatic event (e.g., natural disaster) or whether a provider offers services for patients with PTSD caused by multiple types of traumatic events (e.g., a combat-related experience, transportation accident). Volume referred to the number of patients treated for exposure to a traumatic event. Frequency indicated how often a provider was exposed to a patient's traumatic material. Ratio indicated the percentage of traumatized patients in the provider's case load. Further, because the mental health providers in this study provided their services to military and veteran patients, the ratio of patients with trauma caused by a military combat experience was also considered.

### Psychosocial and Work-Related Correlates

In addition to the indirect exposure to trauma, organizational and individual factors may affect professionals working with traumatized military patients (Voss Horrell et al., 2012). For example, a provider's own direct exposure to traumatic events may contribute to STS symptoms (cf. Devilly et al., 2009). Thus, one's personal trauma history should be accounted for when testing for the relationship between indirect exposure and STS. Recent research indicated, however, that the results of studies testing the relationship between personal history of trauma and STS were inconclusive (Elwood et al., 2011). The discrepancies in the results may, to some

degree, depend on the type of the direct trauma exposure measured. For example, lifetime personal history of trauma, but not past-year trauma exposure, was positively correlated with STS in child protective services workers (Bride et al., 2007).

Theories of PTSD emphasize the importance of cognitive appraisals as contributors to the etiology and maintenance of PTSD (Dalgleish, 2004; Ehlers and Clark, 2000). In particular, negative appraisals about the nature and meaning of the event (e.g., whether it offers threat or safety), about the self (e.g., reactions to the event and subsequent trauma symptoms), and about the world (e.g., other people's reaction to the event) are all said to contribute to the development of posttraumatic distress (Ehlers and Clark, 2000). Other types of cognitive appraisals may involve evaluations of the importance or impact of the stress exposure on subsequent functioning. Indeed, theories of stress assume this type of cognitive appraisal as a key component of stress and adaptation processes predictive of stress consequences (Lazarus and Folkman, 1984). Further, the individual's appraisal of the impact of the exposure is related to the *DSM-IV-TR* (APA, 2000) criterion F for the PTSD diagnosis regarding the significance of functional impairment. Therefore, the present study investigated the relationship between the mental health providers' appraisal of the impact of the indirect exposure and STS symptoms.

In addition to the indirect exposure, appraisal of its impact, and direct exposure to trauma, some work characteristics may also predict STS in mental health providers. Theories explaining distress among workers highlighted that work-related demands and work-related support have predicted employees' well-being (Cieslak et al., 2007; Van der Doef and Maes, 1999). In line with this assumption, work-related characteristics were found to predict STS symptoms, and their effect was stronger than the effect of the indirect exposure (Devilly et al., 2009).

One work-related characteristic specific to mental health providers is the type of psychotherapy provided, such as prolonged exposure (PE). One might consider this to be a risk factor for therapists, yet any assumptions should be made with caution because providing exposure therapy for trauma patients was not found to be related to STS, whereas clinicians who advocate exposure therapy but do not provide it for patients were found to present strong STS symptoms (Deighton et al., 2007).

Professional social support is often identified as a protective factor for the development of STS. The results, however, are ambiguous, even for studies using the same measure of STS. For example, investigators of Internet child pornography who indicated high social support from family and friends reported low STS, but strong reliance on co-workers was correlated with high STS (Perez et al., 2010). High work-related social support was found to predict a low level of avoidance symptoms but was unrelated to intrusion and arousal symptoms of STS (Argentero and Setti, 2011). In addition, some aspects of organizational support (e.g., informational support) seem to be an important protective factor for development of STS symptoms (Choi, 2011b). There is also evidence for reducing STS symptoms through professional support received in clinical supervision (Creamer and Liddle, 2005). This evidence shows that professional supervision may constitute a protective factor for development of STS. Collectively, the research is equivocal on the positive and negative effects of professional support for mental health providers.

### STUDY 1: PREVALENCE AND CORRELATES OF STS

The purposes of this study were twofold: a) to test the relationship between indirect exposure to trauma (measured with a multidimensional assessment of the exposure, including diversity, volume, frequency, and ratio) and STS and b) to investigate the possible correlates of STS: personal history of trauma, providers'

appraisal of the impact of secondary exposure, work characteristics, and professional support.

**Methods**

**Participants and Procedure**

This study was part of the ongoing SupportNet Project designed to evaluate indirect exposure to trauma; work-related demands and resources; and their impact on job burnout, work engagement, and STS in military mental health providers. Data were collected by means of an online survey. An e-mail with information about the SupportNet study and a link to the survey was sent to on-post and off-post behavioral health providers working with military patients. The off-post providers (*i.e.*, located in the civilian community) received an invitation to this study through an online newsletter sent by TriWest Healthcare Alliance, an organization that manages health benefits for military patients and their families. The on-post providers (*i.e.*, working within military installations) were contacted by e-mail sent by the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, CO, and by the psychology consultant to the US Army Surgeon General.

Of 339 participants who initially consented to this study, 224 (66%) met the inclusion criteria (*i.e.*, working at least 1 year as a clinical psychologist, counselor, or social worker; providing services for a military population; and being indirectly exposed to trauma through work with patients) and completed the survey. The mean age was 48.92 (SD, 13.04) years, and the mean length of work experience was 16.40 (SD, 10.42) years. Demographic and work characteristics of the sample are presented in Table 1. The participants were predominantly women (67%); with doctorate (54%) or master's degrees (46%); and working full time (78%) or part time (22%) as clinical psychologists (45%), counselors (31%), or social workers (23%). Slightly more than half of the sample was serving as on-post (57%); and the rest, as off-post (43%) behavioral health providers. The sample was almost equally split between those who did and those who did not have any military experience (44% and 56%, respectively). One fifth of the sample (19%) had deployed to a combat zone at least once. They reported using a mixture of different therapeutic approaches, with most reporting cognitive behavioral therapy (CBT, 90%), followed by cognitive processing therapy (CPT, 42%), PE (30%), and eye movement desensitization and reprocessing (EMDR, 29%).

**Measures**

The online questionnaire consisted of several instruments.

**Indirect exposure to trauma**

The Secondary Trauma Exposure Scale (STES) was developed for the purpose of this study to measure mental health providers' indirect exposure to traumatic events. Similar to the brief instruments designed for screening direct exposure to trauma (Norris, 1990), the STES consists of the list of potentially traumatic events. In the STES, however, participants are not instructed to indicate the traumatic events they personally experienced but to check the events (answers yes or no) they were exposed to through their work with patients. The list of 10 events included natural disasters, transportation accidents, other serious accidents, physical assaults, sexual assaults, other life-threatening crimes, military combat or exposure to a war zone, life-threatening illness or injury, sudden death of someone close, and a global category of "other."

The STES measures four aspects of indirect exposure: diversity, volume, frequency, and ratio. The diversity index is calculated by counting how many types of traumatic events were checked on the list (range, 0–10). Volume and frequency of an indirect exposure were measured with two separate questions also referring to the list: "During

your professional career, how many of your patients experienced at least one of the above events?" (the response scale "none, 1 or 2, 10 or less, 50 or less, 100 or less, a few hundred, and a few thousand" was coded as 0, 2, 10, 50, 100, 500, and 1000, respectively) and "During your entire professional career, how frequently have you worked with patients who experienced at least one of the above events?" (scale, 1–7: never, a few days in a year; 1 day a month, a few days a month, 1 day a week, a few days a week, and every day), respectively. The ratio of indirect exposure was assessed with two questions estimating the percentage of the providers' clients who were traumatized.

**Appraisal of the impact of indirect exposure**

The appraisal of the impact of being exposed to the history and details of patients' traumatic events was assessed with 10 items. The participants were asked to assess how hearing about each checked event in the STES affected them. The responses are given on a scale from 1 to 7 (from "very negative" through "neutral" to "very positive"). The item mean score was calculated as the index of appraisal. The Cronbach's  $\alpha$  was 0.92.

**Direct exposure to trauma**

To control for the providers' direct exposure to trauma, we asked a question referring to the list of 10 potentially traumatic events

**TABLE 1.** Demographic and Work Characteristics of the Behavioral Health Providers Participating in the SupportNet Study

Characteristic	n	%
Sex		
Male	75	33
Female	149	67
Relationship status		
Long-term committed relationship	169	75
Not in a relationship	50	22
Profession		
Clinical psychologist	102	45
Counselors or psychotherapists	70	31
Social workers	52	23
Education		
Master's degree	103	46
Doctorate or professional degree	120	54
Employment		
Part time	49	22
Full time	175	78
Military experience		
No military service	125	56
Active or former military	98	44
Deployment	43	19
Therapy		
CBT	201	90
CPT	95	42
PE	68	30
EMDR	64	29
Work setting		
On-post providers	127	57
Off-post providers	97	43

*N* = 224 for the total sample. Frequencies may not add up to 224 because of missing data. Percentages may not sum up to 100% because of missing data or rounding off.

**TABLE 2.** Descriptive Statistics for the Demographic, Work-Related, and Exposure-Related Characteristics

Variables	Mean	SD	Range	
			Actual	Potential
Age	48.92	13.04	28–80	—
Years of work experience	16.40	10.42	1–45	—
Work characteristics and professional support				
Too much paper work	2.79	1.31	1–5	1–5
Too many patients	2.01	1.23	1–5	1–5
No. hours of individual clinical supervision or consultation per month	2.51	3.90	0–28	—
No. hours of group clinical supervision or consultation per month	2.17	3.25	0–20	—
Frequency of peer supervision	4.32	1.49	1–7	1–7
Direct exposure	3.24	1.84	1–9	0–10
Indirect exposure to trauma				
Diversity of exposure	7.41	2.18	1–10	0–10
Volume	423.89	295.49	2–1000	0–1000
Frequency	6.17	0.96	3–7	1–7
Ratio: percentage of traumatized patients	63.32	25.25	2–100	0–100
Ratio: percentage of patients describing a graphic military combat experience	32.02	28.54	0–100	0–100
Appraisal of indirect trauma exposure	3.34	0.77	1–6	1–7
STS	31.91	10.65	17–66	17–85

Response rates for indices of volume, frequency, and frequency of peer supervision are provided in the *Work and Exposure Characteristics* section (see *Results* for study 1).

included in the STES: “How many of the types of traumatic events listed above have you personally experienced?” (scale from 0 to 10).

#### Secondary traumatic stress

Symptoms of secondary trauma were measured with the STSS (Bride et al., 2004). This 17-item, self-report instrument evaluated the frequency of intrusion, avoidance, and arousal symptoms resulting from an indirect exposure to trauma at work. The list of symptoms corresponds to the B, C, and D diagnostic criteria for PTSD specified in the *DSM-IV-TR* (APA, 2000). The responses were given on a scale from 1 to 5 (from “never” to “very often”). The participants indicated how often each of the symptoms was experienced in the last month. Scores were obtained by summing the items. Good psychometric properties of this instrument have been demonstrated in many studies (Bride, 2007; Bride et al., 2004). The reliability in our study was  $\alpha = 0.79$  for intrusion,  $\alpha = 0.87$  for avoidance,  $\alpha = 0.84$  for arousal symptoms, and  $\alpha = 0.93$  for the total score.

#### Work characteristics and professional support

Several survey questions were designed to gain knowledge about work content, work-related demands, and resources. We asked about the primary occupational role (clinical psychologist, counselor, psychotherapist, or social worker), therapeutic approaches used in work with clients (CBT, CPT, PE, or EMDR), employment status (part time or full time), years of work experience as a mental health provider, the exact number of hours of individual and group supervision received monthly, and frequency of professional peer support (scale, 1–7: never, a few days in a year, 1 day a month, a few days a month, 1 day a week, a few days a week, and every day). We also assessed the participants’ perception of their workload in the last month by asking how frequently they were constrained by a) having too much paper work and b) having too many patients (scale, 1–5: less than once per month or never, once or twice per month, once or twice per week, once or twice per day, and several times per day).

#### Demographic information

Sociodemographic information was collected: sex, age, highest level of education, relationship status, military status, and deployment to a combat zone.

## Results

### Work and Exposure Characteristics

Table 2 presents means, standard deviations, and actual and potential ranges for the main variables of this study. The participants were receiving a mean of 2.51 hours of individual clinical supervision and 2.17 hours of group clinical supervision per month. They were receiving peer support by discussing the patients with colleagues for a few days a month (mean percentage of response categories: never, 1%; a few days in a year, 13%; 1 day a month, 16%; a few days a month, 27%; 1 day a week, 15%; a few days a week, 23%; and every day, 5%). The respondents also indicated that they were, on average, constrained by having too many patients (*i.e.*, once or twice per month) and, more frequently, by having too much paper work (*i.e.*, once or twice per week). All the providers reported at least one personally experienced traumatic event, with a mean number of approximately 3 (SD, 1.84). A similar number of personally experienced traumatic events were reported among military medical personnel (Maguen et al., 2009).

**TABLE 3.** Frequency and Percentage of the Behavioral Health Providers Meeting the Diagnostic Criteria for STS Due to an Indirect Trauma Exposure through a Practice with Traumatized Military Patients

Criteria	n	%
No criteria met	76	33.9
Criterion B: intrusion	129	57.6
Criterion C: avoidance	67	29.9
Criterion D: arousal	79	35.3
Criteria B and C	53	23.7
Criteria B and D	66	29.5
Criteria C and D	51	22.8
Criteria B, C, and D	43	19.2

**TABLE 4.** Comparing Intensity of Intrusion, Avoidance, Arousal, and Total Score of the STSS in the SupportNet Study With Results Obtained in Other Studies

Study	Participants (n)	Intrusion, Mean (SD)	Avoidance, Mean (SD)	Arousal, Mean (SD)	Total score, Mean (SD)
SupportNet study	Behavioral health providers working with military trauma (224)	8.91 (2.96)	13.33 (5.06)	9.68 (3.63)	31.91 (10.65)
Bride (2007)	Social workers (276)	8.18 (3.04)	12.58 (5.00)	8.93 (3.56)	29.69 (10.74)
Bride et al. (2007)	Child protective services workers (187)	10.97 (4.07)	15.64 (5.98)	11.58 (4.22)	38.20 (13.38)
Bride et al. (2009)	Substance abuse counselors (225)	8.83 (3.28)	13.14 (5.54)	9.27 (4.10)	31.20 (12.30)
Choi (2011a)	Providers for survivors of family or sexual violence (154)	9.10 (2.90)	13.40 (5.00)	9.5 (3.5)	32.07 (10.39)
Smith Hatcher et al. (2011)	Juvenile justice education workers (89)	10.64 (3.19)	15.73 (4.90)	11.37 (3.79)	37.74 (10.74)

In terms of secondary exposure, the providers indicated that, on average, during the course of their professional career, they treated seven different types of trauma (cf. diversity), worked with a few hundred traumatized patients (percentage of response categories for volume: none, 0%; 1 or 2, 1%; 10 or less, 2%; 50 or less, 12%; 100 or less, 18%; a few hundred, 54%; a few thousand, 13%), and treated traumatized patients for a few days a week (percentage of response categories for frequency: never, 0%; a few days in a year, 0%; 1 day a month, 2%; a few days a month, 6%; 1 day a week, 10%; a few days a week, 38%; every day, 44%). The providers declared that, in their professional career, approximately 63% of the patients were traumatized (cf. ratio) and 32% experienced military-related traumas. The appraisal of the impact of this indirect trauma exposure on the providers was negative (3.34 on a scale from 1 to 7, with 3 meaning "somewhat negative").

### Prevalence of STS

Table 3 presents how many behavioral health providers met the diagnostic criteria for STS. The algorithm proposed by Bride (2007) follows *DSM-IV-TR* recommendations for a diagnosis of PTSD (APA, 2000) and includes criteria B (intrusion or re-experiencing), C (avoidance), and D (arousal) and their combinations. Criterion A (an indirect or direct exposure to trauma) was met by all participants as part of the inclusion criteria for this study. According to the algorithm, symptoms of STS included in the STSS are endorsed if the given corresponding item is scored 3 or higher on a scale from 1 to 5. At least one symptom must be endorsed to meet criterion B, three for criterion C, and two for criterion D.

Table 3 shows that despite being indirectly exposed to the traumatic history of patients, 33.9% of the participants did not meet any of the B, C, or D criteria for PTSD. However, 19.2% of the providers met all three core criteria for PTSD. The three occupational groups (counselors or psychotherapists, social workers, and clinical psychologists) did not differ in terms of meeting all three diagnostic criteria  $\chi^2(2, N = 224) = 1.48, p = 0.478$ , or in terms of the mean total STS scores,  $F(2,221) = 0.79, p = 0.455, \eta^2 = 0.007$ . Different combinations of two of the criteria were found in 22.8% to 29.5% of the study population. The criterion met most frequently was intrusion (57.6%), followed by arousal (35.3%) and avoidance (29.9%). Table 4 presents descriptive statistics for intensity of intrusion, avoidance, and arousal symptoms and for a total score on the STSS.

### Correlates of STS

Further statistical analyses explored whether the participants' demographic, exposure-related, and work-related characteristics were related to STS. In the case of the categorical variables, a series of one-way analyses of variance were used to test for STS differences

across sex, relationship status, profession, education levels, employment, military status, deployment, different types of therapeutic approaches used in work with patients (CBT, CPT, PE, or EMDR), and type of work setting (on-post versus off-post providers). Descriptive statistics for these variables are presented in Table 1. None of these characteristics had a significant effect on intensity of STS (all  $F$ 's < 1.60 and  $p$ 's > 0.207).

Correlational analysis (Pearson's  $r$ ) conducted for continuous variables showed that several work- and exposure-related factors were associated with STS. As shown in Table 5, only one of five indices of indirect trauma exposure, the ratio of traumatized clients in one's professional career, was correlated with STS. The providers' personal history of trauma, being constrained by having too many patients, and too much paper work were also positively associated with STS. Finally, the providers' appraisal of impact of indirect exposure to trauma was negatively correlated with STS (i.e., more negative appraisal correlated with higher level of symptoms).

In addition, a regression analysis was conducted with five significant correlates of STS entered as predictors of the STS symptoms. The regression equation was significant,  $F(5,218) = 16.14, p < 0.001, R^2 = 0.27$ . Multicollinearity was not a problem in these data ( $VIF \leq 1.33$ ). Overall, the predictors explained 27% of STS variance. Having too many patients ( $\beta = 0.27, p < 0.001$ ), higher levels of direct exposure to trauma ( $\beta = 0.17, p = 0.004$ ), and more negative appraisal of impact of indirect exposure ( $\beta = 0.33, p < 0.001$ ) predicted higher frequency of STS symptoms. The effects of amount of paper work ( $\beta = 0.04$ ) and the ratio of traumatized clients in one's professional career ( $\beta = 0.05$ ) were negligible. Study 2 followed up these findings to compare our prevalence ratings with other samples.

### STUDY 2: META-ANALYSIS

Several studies have evaluated the frequencies of STS across groups of behavioral health professionals. These studies relied on similar methods but reached different conclusions in terms of STS symptoms. One possible way to integrate the existing evidence would be to conduct a systematic review or meta-analysis, which collates all empirical evidence using the systematic procedure of search, extraction, and evaluation of studies to minimize researchers' biases. Compared with systematic review, meta-analysis accounts for the fact that analyzed studies may differ in terms of statistical power. In addition, meta-analysis allows for statistical estimation of the mean level of symptoms across the samples (weighted mean). It also allows for calculation of the confidence intervals (CIs), which, with the assumed probability level (usually 95%), indicate intervals within which the mean level of symptoms for the population should be included. These reference points might be very useful for diagnostic

TABLE 5. Correlations Between Study Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	—													
2. Work experience	0.77***	—												
3. Too much paper work	0.03	0.05	—											
4. Too many patients	-0.19**	-0.12	0.49***	—										
5. Hours of individual clinical supervision or consultation per month	-0.34***	-0.35***	0.07	0.07	—									
6. Hours of group clinical supervision or consultation per month	-0.28***	-0.31***	0.12	0.11	0.51***	—								
7. Frequency of peer supervision	-0.25***	-0.13	0.05	0.09	0.31***	0.32***	—							
8. Direct exposure	0.17*	0.12	0.16*	0.09	-0.02	0.06	0.01	—						
9. Indirect exposure: diversity	0.09	0.09	-0.03	-0.08	-0.07	0.03	0.08	0.15*	—					
10. Indirect exposure: volume	0.10	0.20**	0.15*	0.14*	-0.08	-0.11	0.15*	0.15*	0.26***	—				
11. Indirect exposure: frequency	-0.06	-0.01	0.06	0.15*	0.11	-0.01	0.32***	0.07	0.15*	0.40***	—			
12. Indirect exposure: ratio; percentage of traumatized patients	0.04	-0.01	0.05	0.08	0.04	0.04	0.09	0.15*	0.14*	0.27***	0.40***	—		
13. Indirect exposure: ratio; percentage of patients describing a graphic military combat experience	-0.29***	-0.17*	0.02	0.27***	0.12	-0.09	0.19**	0.05	-0.10	0.17*	0.23***	0.30***	—	
14. Appraisal of indirect trauma exposure	-0.10	-0.04	-0.09	-0.12	0.08	-0.06	0.15*	-0.01	0.17**	0.20**	0.08	-0.11	-0.10	—
15. STS	0.00	0.02	0.23***	0.35***	0.06	0.09	-0.01	0.21***	-0.01	0.06	-0.08	0.14*	0.13	-0.37***

\* $p < 0.05$ .\*\* $p < 0.01$ .\*\*\* $p < 0.001$ .

TABLE 6. Meta-analysis Results for Severity of STS Symptoms

STS	K	Mean	Heterogeneity		95% CI for Mean		Z
			Q	I <sup>2</sup> %	Lower Level	Upper Level	
Intrusion	6	9.41	87.84***	94.31	8.63	10.19	23.58***
Avoidance	6	13.93	52.50***	90.48	12.94	14.92	27.49***
Arousal	6	10.03	70.02***	92.86	9.20	10.86	23.76***
Total score	6	32.91	132.98***	96.24	29.51	36.31	18.96***

N = 1155. Significant Q values indicate that variation in means across studies is due to heterogeneity of the studies rather than chance; I<sup>2</sup>% indicates the percentage of the total variability in the analyzed studies due to true heterogeneity (i.e., due to between-study variability); a low level of this index would indicate variability due to sampling error; significant Z values indicate that the estimated mean values are different from zero.  
 k indicates number of studies; mean, weighted mean value.  
 \*\*\*p < 0.001.

purposes. The aim of study 2 was to compare the mean level of STS in the investigated population with the mean levels of STS in other populations.

### Methods

Descriptive statistics found for behavioral health providers working with the military were compared with statistics obtained from previous studies in which STS was measured with the STSS. Articles cited in Table 4 were identified through searches of databases (PsychINFO, PILOT, MEDLINE, and ScienceDirect) for peer-reviewed articles published in English through April 2012. The only key word used for identification of research was the name of the scale: *Secondary Traumatic Stress Scale*. A number of criteria had to be met to be included in the meta-analytic review. Participants had to be indirectly exposed to trauma through their work. In addition, the article must include information about sample size, mean values, and standard deviations for each subscale of the STSS and for the total score.

Of the 27 articles identified and reviewed, 5 met the inclusion criteria. Most studies were excluded because, although these provided a total score for the STSS, these did not provide appropriate descriptive statistics for the intrusion, avoidance, and arousal criteria. The sample size for the individual studies included in the meta-analysis ranged from 89 to 276, and a total of 1155 participants were included in the meta-analysis.

### Results

Table 6 displays the results of the meta-analysis. Significant results of heterogeneity test (Cochran's Q) indicated that variation in mean values across the studies is due to heterogeneity rather than chance; therefore, the random-effect meta-analysis method was applied. Most of the variability across the samples was due to between-studies variability (I<sup>2</sup> > 90%) and not due to sampling errors. Across the samples, the 95% CI for the mean values of the STSS would be 8.53 to 10.51 for intrusion, 12.82 to 15.31 for avoidance, 9.06 to 11.15 for arousal, and 28.81 to 37.45 for total STSS score.

The mean values for intrusion, avoidance, arousal, and total score from the SupportNet study were contained in a range of respective CIs calculated in the meta-analysis. This indicates that the severity of STS symptoms in the SupportNet sample is similar to the severity of these symptoms in other investigated populations. This conclusion remains valid even if the results of the current study are excluded from the meta-analysis.

### DISCUSSION

A logical extension of the psychological strain endured by military members who have completed deployments to Iraq and Afghanistan is the presence of STS symptoms in those who care for

them. Previous research targeting clinicians working with civilian population showed that among those who were indirectly exposed to traumatic material through work, a sizeable percentage (15%–39%) experienced STS (Bride, 2007; Bride et al., 2007, 2009; Choi, 2011a; Dominguez-Gomez and Rutledge, 2009; Smith Hatcher et al., 2011; Quinal et al., 2009). The present study documents the level of STS in military behavioral health providers. A limited impact of indirect exposure to trauma at work on developing STS symptoms was found in approximately a third of military behavioral health providers, whereas one in five reported meeting all criteria of PTSD because of indirect exposure to trauma. Compared with rates of current PTSD among veterans (2%–17%; Richardson et al., 2010) or the general population (3.5%; Kessler et al., 2005) the prevalence observed in the present study is high. It may be assumed that the performance of different tasks (including those work related) may be affected by PTSD symptoms (cf. Wald and Taylor, 2009). Because symptoms of STS seem to be a common problem, military behavioral health providers may need easy access to effective psychosocial interventions (for overview, see Stergiopoulos et al., 2011), targeting the reduction of STS symptoms and therefore improving their work outcomes.

The meta-analytic results demonstrate similar rates of STS symptoms in the sample of military behavioral health providers and among other high-risk professions such as emergency and rescue workers, substance abuse counselors, and agency-based social workers (Argentero and Setti, 2011; Bride, 2007; Bride et al., 2009). The results of our meta-analysis, indicating similar levels of STS symptoms across the studies, support the validity of our findings and allow for cautious generalizations. A lack of differences across workers exposed to secondary trauma and providing services to various types of clients may indicate that the type of performed work (e.g., social work, education, or counseling; working with traumatized families, offenders, military) may play a negligible role in explaining STS symptoms. On the other hand, although levels of STS are similar, its symptoms may be explained by different predictors across populations.

Our findings shed light on exposure-related work characteristics that may contribute to the development of STS. Across the indices of exposure, only the ratio of traumatized clients in one's professional career was associated with STS among the providers working with military patients. So far, research indicated that the percentage of traumatized clients may be a prevalent stressor among professionals working with traumatized clients (Bride et al., 2009). Voss Horrell et al. (2011) suggested that secondary exposure characteristics, such as years of experience in trauma treatment, total hours per week spent working with trauma patients, and caseload balance, may have a potential to affect clinicians working with veterans of Iraqi and Afghanistan operations. These suggestions,

however, were based on a review of scarce research conducted among providers serving civilian populations. The results of our study suggest that the multidimensional structure of secondary exposure at work should be taken into account when predicting STS.

Perhaps the most important correlate to consider refers to perceptions of the negative impact of trauma-related work. The importance of cognitive appraisals of significant environmental stressors (*i.e.*, trauma clinical work) is consistent with the general theories of stress and well-being (Lazarus and Folkman, 1984). Research conducted among workers providing services to civilian population and exposed to secondary trauma indicated that associations between stress appraisal and well-being may be particularly relevant among those with lower personal resources, such as self-efficacy (Prati et al., 2010). Future research should look for individual and organizational resources protecting behavioral health providers who perceive high negative impact of work on their own mental health.

As previously noted, job-related demands (*e.g.*, workload, organizational constraints) and resources (*e.g.*, support from peers or superiors) predict employees' well-being (Cieslak et al., 2007; Van der Doef and Maes, 1999). The present study indicated that a higher number of patients and more administrative paper work constitute important work-related demands, associated with higher levels of STS. Voss Horrell et al. (2011) listed case load size and a lack of availability of support as the potentially critical job-related demands influencing well-being of providers working with traumatized veterans of military operations in Iraq and Afghanistan. Our findings are in line with results reported by Devilly et al. (2009), in which job stress levels were found to be particularly important in predicting STS.

Work-related resources such as social support and peer supervision were unrelated to STS levels. This finding is in contrast to other research, suggesting that more support from colleagues and supervisory support were related to lower STS among workers providing services to civilians (Argentero and Setti, 2011; Choi, 2011b; Creamer and Liddle, 2005). Voss Horrell et al. (2011) also listed peer supervision among potential protective factors, relevant for the mental health of providers working with traumatized veterans of operations in Iraq and Afghanistan. Again, this suggestion was made on the basis of research conducted among providers working with civilian populations. One explanation for the discrepancies between the findings might be the unique nature of the chain of command in the supervision of military clinicians. Work stress research highlighted the role of support of managers/superiors in predicting employees' mental health (cf. Cieslak et al., 2007). Clearly, the role of work-related support from different sources (supervisors, co-workers, and managers) in predicting STS requires further research.

We found that the greater the number of direct exposure to trauma is, the higher the reported level of STS is. This observation is consistent with previous research, conducted among providers working with civilian clients (Pearlman and Mac Ian, 1995), and in line with the hypothesized determinants of mental health of providers working with military populations (Voss Horrell et al., 2011). What remains unclear is how personal trauma history interrelates with work-based demands, indirect exposure, and resources to influence STS. Future research should investigate whether particular types of trauma, such as childhood abuse (cf. Marcus and Dubi, 2006), may play a particularly salient role and moderate the impact of work-related secondary exposure.

Our study has several limitations. A cross-sectional design and convenience sampling do not allow for any causal conclusions. The measure used to capture direct personal exposure was developed for this study, and therefore, it has not been previously validated. Although applying assessment methods such as the Clinician-Administered PTSD Scale could be superior, an individual clinical assessment was not feasible for the present study. It should be noted that previous research that measured direct exposure and STS applied even more

limited assessment methods such as "Do you have a trauma history?" (Pearlman and Mac Ian, 1995). Future research should use a standardized clinical interview approach to secure a more accurate assessment of trauma exposure. The present study focused on one negative effect of indirect trauma exposure (*i.e.*, STS as a set of PTSD-like symptoms), whereas other possible consequences or conceptualizations (*e.g.*, compassion fatigue or vicarious traumatization) were not analyzed. Consequently, the findings are limited to STS. Further longitudinal studies targeting representative samples of mental health providers serving military men and women are required.

## CONCLUSIONS AND FUTURE DIRECTIONS

Previous research targeting behavioral health providers working with military patients has been limited (cf. Peterson et al., 2009). Hypothesized risk and resource factors affecting the well-being of behavioral health providers working with the military were based on findings predominantly referring to civilian providers working with civilian clients (Voss Horrell et al., 2011). Our study is among the first showing empirical evidence for high prevalence of STS (19.2%) among providers working with the military. The results of the meta-analysis contribute to the literature showing that the rates of STS prevalence are similar across samples of workers performing different types of duties, in various populations of clients. Further, the present research highlights the need for multidimensional evaluation of secondary exposure, with only one dimension (ratio, *i.e.*, high percentage of traumatized clients in one's professional career) emerging as a significant correlate of STS. In line with research conducted among workers providing services to traumatized civilians, we found that personal history of trauma and constraints related to patient load are associated with STS levels.

Further theory-based research is needed to evaluate the role of risk and protective factors related to psychological resiliency factors (Maugen et al., 2008) such as self-efficacy (Prati et al., 2010) or support from superiors (Cieslak et al., 2007) in predicting STS. There is a lack of studies investigating how STS interfaces with other critical negative (*e.g.*, burnout) and positive (*e.g.*, posttraumatic growth) outcomes. Such studies will provide a critical insight into the mechanisms responsible for the onset and the maintenance of mental health problems and thus inform the development of theory- and evidence-based supportive interventions, needed for military behavioral health providers.

## DISCLOSURES

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## Appendix 13

# Cultivating Secondary Traumatic Growth Among Healthcare Workers: The Role of Social Support and Self-Efficacy

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**Objective:** This 2-study longitudinal investigation examined the indirect effects of secondary traumatic stress (STS) on secondary traumatic growth via two mediators: perceived social support and secondary trauma self-efficacy. In particular, we tested if the 2 hypothetical mediators operate sequentially, that is, with secondary trauma self-efficacy facilitating social support (i.e., cultivation hypothesis) and/or social support enhancing self-efficacy (i.e., enabling hypothesis). **Method:** Participants in Study 1 ( $N = 293$  at Time 1,  $N = 115$  at Time 2) were behavioral healthcare providers working with U.S. military personnel suffering from trauma. Study 2 was conducted among Polish healthcare workers ( $N = 298$  at Time 1,  $N = 189$  at Time 2) providing services for civilian survivors of traumatic events. **Results:** In both studies, multiple mediational analyses showed evidence for the cultivation hypothesis. The relationship between STS at Time 1 and secondary traumatic growth at Time 2 was mediated sequentially by secondary trauma self-efficacy at Time 1 and social support at Time 2. The enabling hypothesis was not supported. **Conclusion:** Education and development programs for healthcare workers may benefit from boosting self-efficacy with the intent to facilitate perceived social support. © 2014 Wiley Periodicals, Inc. *J. Clin. Psychol.* 0:1–16, 2014.

**Keywords:** secondary traumatic stress; secondary traumatic growth; social cognitive theory; perceived social support; self-efficacy; mediation

Negative outcomes after *direct* exposure to traumatic events have been linked to psychological disorders including posttraumatic stress disorder (PTSD), represented by such symptoms as reexperiencing, avoidance, and hyperarousal (Brewin, Andrews, & Valentine, 2000). Secondary traumatic stress (STS), in comparison, is defined by the same set of symptoms resulting from *indirect* exposure to trauma (Bride, Robinson, Yegidis, & Figley, 2004). This indirect exposure is typified by healthcare providers working with traumatized individuals. The indirect exposure has been associated with many negative consequences including higher distress and increased negative cognitions (Pearlman & Mac Ian, 1995), higher job burnout (Ballenger-Browning et al., 2011), and lower job satisfaction (Devilly, Wright, & Varker, 2009).

In addition to the negative consequences of direct and indirect exposure to trauma, recent research has highlighted the importance of positive changes after exposure to trauma, such as meaning-making processes (Park & Ai, 2006) and posttraumatic growth (Cann et al., 2010). Building on the posttraumatic growth construct, Arnold and colleagues (2005) coined the term *vicarious posttraumatic growth*, referring to positive changes in schemas about self and the world

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and perceived psychological growth. Trauma-focused providers may experience this type of growth as a result of their work. Although we agreed with Arnold et al.'s conceptualization of vicarious posttraumatic growth, we have chosen to utilize the term *secondary traumatic growth* as it denotes more clearly the growth resulting from indirect exposure to trauma.

There is limited evidence for the relationships between STS and psychological growth variables among human services workers indirectly exposed to trauma. Positive associations between STS and secondary posttraumatic growth were found in studies enrolling mental health therapists (Brockhouse, Msetfi, Cohen, & Joseph, 2001) and disaster workers (Linley & Joseph, 2006). However, there are two primary limitations of these findings. First, the Brockhouse et al. (2001) study was cross-sectional. And, second, neither study utilized a theory-driven model to elucidate the underlying mechanisms related to posttraumatic growth. In this article, we reported on two studies that were longitudinal and based on social cognitive theory (Bandura, 1997).

### *Social Cognitive Theory as a Theoretical Framework*

Social cognitive theory (SCT; Bandura, 1997) highlights bidirectional interactions between three sets of variables: the environment, individual factors, and behavior. Called triadic reciprocal determinism, this framework emphasizes self-regulation as a key mechanism for human adaptation. The triadic system functions through feedback processes operating internally (e.g., self-evaluations) and externally (changes in environmental conditions) and aims at recalibrating efforts toward desired outcomes (e.g., reduction of negative states). Self-efficacy is a critical appraisal factor that is central to the self-evaluative process. Social support operates as a primary environmental resource. We argue that social support and self-efficacy serve as key mediators in the association between STS and secondary traumatic growth.

*Self-efficacy.* Self-efficacy, in the context of traumatic stress, refers to perceived ability to manage environmental demands and personal functioning after adverse or traumatic experiences (Benight & Bandura, 2004). Through positive construal of challenging environmental demands, individuals are able to manage these demands in a more effective manner. Self-efficacy is related to lower levels of secondary traumatic distress in trauma counselors (Ortlepp & Friedman, 2002). Further, there is empirical evidence suggesting self-efficacy may play an important mediational role in the relationship between trauma exposure and psychological distress in disaster survivors (Benight, Ironson et al., 1999) and between stress appraisal and compassion satisfaction in rescue workers (Prati, Pietrantonio, & Cicognani, 2011).

We identified no studies examining the mediation effect of self-efficacy on the relationship between STS and secondary traumatic growth. However, based on well-documented mediating functions of self-efficacy in the context of direct traumatization (Cieslak, Benight, & Lehman, 2008), it may be assumed that self-efficacy would play a mediating role in the relationship between STS and secondary traumatic growth. In our studies, we hypothesized that self-efficacy would mediate the relationship between STS and secondary traumatic growth, with higher STS relating to lower self-efficacy and lower self-efficacy leading to lower secondary traumatic growth (Hypothesis 1).

*Social support.* Social support is a concept that refers to actual aiding resources provided by others (i.e., received social support) or to the perception of availability of aiding resources (i.e., perceived social support; Lin, 1986). Higher social support leads to lower negative consequences of direct traumatization (e.g., lower PTSD; Griffith, 2012) and higher positive changes after a traumatic event such as posttraumatic growth (Cieslak et al., 2009; Luszczynska, Sarkar, & Knoll, 2007). Similarly to self-efficacy, social support may be considered a mediator in the relationship between STS and secondary traumatic growth. Although we identified no research on the mediating role of social support in this relationship, there is evidence showing that social support mediates the relationship between posttraumatic distress symptoms and posttraumatic growth (Hogan & Schmidt, 2002). Therefore, we hypothesized that perceived social support would mediate the effect of STS on secondary traumatic growth. Specifically, higher secondary

traumatic stress would lead to lower perceived social support, and lower perceived social support would predict lower secondary traumatic growth (Hypothesis 2).

*Cultivation and enabling hypotheses.* Self-efficacy and social support have been defined in this investigation as mediators. Schwarzer and Knoll (2007), however, argued that the relationship between support and self-efficacy may be bidirectional. There are two alternative hypotheses explaining the relationship between self-efficacy and social support. The cultivation hypothesis suggests that self-efficacy facilitates social support, whereas the enabling hypothesis states that social support enhances and protects self-efficacy (Schwarzer & Knoll, 2007). Previous studies supporting the cultivation hypothesis showed that self-efficacy reduced depressive symptoms through the mediating effect of received social support (Schwarzer & Gutiérrez-Doña, 2005; Schwarzer & Knoll, 2007). In studies testing the enabling hypothesis, self-efficacy mediated the effect of perceived social support on distress (Benight, Swift et al., 1999) and quality of life (Amir, Roziner, Knoll, & Neufeld, 1999) and the effect of received social support on posttraumatic growth (Cieslak et al., 2009; Luszczynska et al., 2007).

Although both the cultivation and enabling hypotheses have been supported by empirical findings, no studies have examined these hypotheses in the context of indirect exposure to trauma. We hypothesized that the effect of STS on secondary traumatic growth would be mediated first by secondary trauma self-efficacy and then by perceived social support (Hypothesis 3, cultivating effect), and/or mediated first by perceived social support and then by self-efficacy (Hypothesis 4, enabling effect). All four hypotheses were tested in two longitudinal studies. Study 1 enrolled behavioral healthcare providers working with military patients suffering from trauma. Civilian healthcare providers offering services for trauma survivors took part in Study 2.

## Study 1

### *Method*

*Participants.* The study was a part of the SupportNet project, investigating predictors of secondary traumatic stress and job burnout among behavioral and mental healthcare providers working with the U.S. military personnel suffering from trauma. Inclusion criteria were as follows: (a) working for at least one year as a clinical psychologist, counselor, social worker, physician or nurse; (b) providing services for a military population; and (c) being indirectly exposed to trauma through interaction with patients. Of 310 respondents who completed the online survey at Time 1 (T1), 293 participants (98 males, 33.4%) were qualified for the present study based on the inclusion criteria. Of those who completed the T1 assessment, 115 participants (33 males, 28.7%) took part in Time 2 (T2) measurement 6 months later.

Table 1 displays the demographic characteristics. Participants experienced indirect exposure to different types of traumatic events through interaction with clients, including, for example, sudden unexpected death of someone close (89.4%), life-threatening illness or injury (88.1%), military combat (86.7%), sexual assault (84.3%), physical assault (82.6%), transportation accidents (80.9%), and natural disasters (66.6%). Additionally, all participants were directly exposed to trauma, with the average number of 3.23 (standard deviation [*SD*] = 1.90) traumatic events reported per person in a lifetime.

*Measures.* Participants completed a set of questionnaires evaluating STS, perceived social support, secondary trauma self-efficacy, and secondary traumatic growth. Indirect exposure to trauma and demographic variables were assessed as possible factors that should be controlled when testing the hypotheses.

*Secondary traumatic stress.* Secondary Traumatic Stress Scale (Bride et al., 2004) is a 17-item questionnaire used to measure the frequency of STS symptoms in the past month. It comprises the Intrusion subscale (five items), the Avoidance subscale (seven items), and the Arousal subscale (five items). The present study only used a total score of all items. Using a 5-point response scale, ranging from 1 (*never*) to 5 (*very often*), participants evaluated frequency

Table 1  
Descriptive and Demographic Statistics for Study 1 and Study 2

Measure	Study 1 T1	Study 1 T2	Study 2 T1	Study 2 T2
Mean age ( <i>SD</i> )	48.91 (12.83)	50.27 (12.59)	35.37 (8.48)	35.08 (8.12)
Gender				
Female	195 (66.6%)	82 (71.3%)	226 (75.8%)	150 (80.6%)
Male	98 (33.4%)	33 (28.7%)	69 (23.2%)	36 (19.0%)
Intimate relationship				
In a long-term relationship	224 (76.5%)	81 (70.4%)	219 (73.5%)	146 (77.2%)
Not in a long-term relationship	62 (21.2%)	31 (27.0%)	77 (25.8%)	42 (22.2%)
Highest degree				
High school	1 (0.3%)	0 (0%)	62 (20.8%)	35 (18.5%)
Associate's degree	1 (0.4%)	0 (0%)	-	-
Bachelor's degree	6 (2.0%)	2 (1.7%)	65 (21.8%)	37 (19.6%)
Master's degree	130 (44.4%)	55 (47.8%)	166 (55.7%)	114 (60.3%)
Doctorate degree	155 (52.9%)	58 (50.4%)	3 (1.0%)	1 (0.5%)
Profession				
115 CP (39.2%)		41 CP (35.7%)	143 HCP (48.0%)	86 HCP (45.5%)
77 counselors (26.3%)		27 counselors (23.5%)	113 SW (37.9%)	77 SW (40.7%)
56 SW (19.1%)		21 SW (18.3%)	37 others (12.4%)	23 others (12.2%)
35 HCP (11.9%)		7 HCP (6.1%)		

Note. T1 = Time 1, T2 = Time 2; SD = standard deviation; CP = clinical psychologist; HCP = healthcare provider; SW = social worker. Sample size for Study 1:  $N_{T1} = 293$ ,  $N_{T2} = 115$ . Sample size for Study 2:  $N_{T1} = 298$ ,  $N_{T2} = 189$ . Some percentages did not add up to 100% because of missing data. Long-term relationship included married couples and couples in a committed relationship.

of each symptom in relation to their work with patients who had been exposed to traumatic events. Sample items are "I felt emotionally numb" and "I felt jumpy." Cronbach's alpha was .94 for both T1 and T2 assessments.

**Secondary trauma self-efficacy.** Because there is evidence that the domain-specific measures of self-efficacy are more useful in predicting adaptation than are the general ones (Luszczynska, Scholz, & Schwarzer, 2005), we employed self-efficacy specific to STS. Secondary trauma self-efficacy is defined as the perceived ability to cope with the challenging demands resulting from work with traumatized clients and the perceived ability to deal with the secondary traumatic stress symptoms. Secondary Trauma Self-Efficacy Scale (Cieslak et al., 2013) is a 7-item questionnaire based on other self-efficacy instruments that were designed to measure perceived ability to cope with demands resulting from direct exposure to trauma and perceived ability to deal with posttraumatic stress symptoms (e.g., Lambert, Benight, Harrison, & Cieslak, 2012). Secondary trauma self-efficacy scale measures self-efficacy in the context of an *indirect* exposure to trauma. Participants rate the degree of perceived capability on a 7-point scale, ranging from 1 (*very incapable*) to 7 (*very capable*). The stem "How capable am I to . . ." is followed by such items as "deal with the impact these people have had on my life." Cronbach's alphas were .87 (T1) and .91 (T2).

**Perceived social support.** Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item questionnaire measuring availability of social support from family (four items), friends (four items), and broadly defined significant others (four items). A total score of all items was used in further analyses. The instruction was modified to measure perceived social support in the context of work-related demands in the past month. Participants rated the degree of agreement for each item on a 7-point scale, ranging from 1 (*very*

strongly disagree) to 7 (very strongly agree). Sample items are “I can talk about my problems with my friends” and “My family really tries to help me.” Cronbach’s alpha was .94 for both T1 and T2.

*Secondary traumatic growth.* Posttraumatic Growth Inventory-Short Form (PTGI-SF; Cann et al., 2010) was used to assess positive changes resulting from indirect exposure to trauma. The original PTGI-SF is a 10-item self-rated questionnaire that measures experience of significant positive change after a trauma. We modified the instruction by asking participants to rate the degree of change as a result of their *indirect* exposure to trauma through work with clients. A 6-point response scale ranged from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very great degree*). Sample items are “I have a stronger religious faith” and “I established a new path for my life.” Cronbach’s alphas were .93 (T1) and .92 (T2).

*Indirect exposure to trauma.* Secondary Trauma Exposure Scale (Cieslak et al., 2013) was used to measure indirect exposure to traumatic events. It comprises a list of 10 potentially traumatic events (e.g., natural disasters, sexual assaults, military combat). Participants responded whether they were exposed to each event through their work with traumatized clients. Then they rated how frequently they worked with patients who experienced at least one of the potentially traumatic events on the list, using a 7-point scale, ranging from 1 (*never*) to 7 (*every day*).

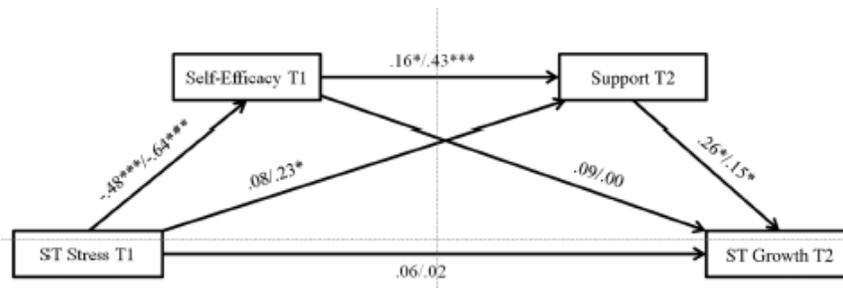
*Demographics.* Demographic questions included age, gender, a relationship status, profession, and highest academic degree.

*Procedure.* The study was approved by the institutional review board (IRB) at the authors’ institution. Providers who were located in the civilian community received the email with a link to the online survey through an online newsletter sent by TriWest Healthcare Alliance, an organization managing health benefits for military patients and their families. Providers located on military installations received the link to the survey in an email from the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, Colorado, and from the Psychology Consultant to the U.S. Army Surgeon General at San Antonio, Texas. Respondents filled out the survey voluntarily, anonymously, and with no compensation for their time. Approximately 6 months later (mean [ $M$ ] = 191.90 days,  $SD$  = 14.18), participants who agreed to take part in the T2 assessment received an email invitation to the online survey containing the same set of the questionnaires as in T1.

*Analytical procedures.* To test whether the data supported the cultivation hypothesis and/or enabling hypothesis, we performed multiple mediation analyses using PROCESS (Hayes, 2012). PROCESS permits for conducting multiple mediator regression analysis, accounting for covariates. Further, PROCESS allows for testing hypotheses assuming that mediators are chained together in a specific sequence (e.g., secondary traumatic stress [the independent variable] predicting social support [the first mediator], which in turn predicts self-efficacy [the second mediator], which predicts secondary traumatic growth [the dependent variable]).

Results of analyses are presented using three types of coefficients. A regression coefficient for each parameter is provided (see Figures 1 and 2). Further, PROCESS estimates the indirect effect coefficient ( $B$ ) for each indirect pathway between the independent variable (STS at T1) and the dependent variable (secondary traumatic growth at T2), accounting for respective mediators and covariates. Bootstrapping method was used to test inferences about the significance of mediation effects ( $B$  coefficients). The bootstrap approach is considered superior to normal theory-based Sobel’s test for the significance of the mediation (Hayes, 2012). Finally, we calculated partially standardized indirect effect size coefficients,  $ab_{ps}$  (Preacher & Kelley, 2011), for each indirect pathway.

To test the cultivation and enabling hypotheses as well as the hypotheses assuming simple mediating effects of self-efficacy and social support, we estimated  $B$  coefficients and confidence



**Figure 1.** Model 1, referring to the cultivation hypothesis, being tested with the multiple mediation analysis. *Note.* A value before the slash is standardized regression coefficient (i.e.,  $\beta$ ) for Study 1, and value after the slash is  $\beta$  for Study 2. T1 = Time 1; T2 = Time 2; ST Stress = secondary traumatic stress; ST Growth = secondary traumatic growth. Additionally, the following effects were controlled in the analyses: (a) the effects of T1 indirect exposure on T1 secondary trauma self-efficacy ( $\beta = -.10$ ,  $p = .19$  for Study 1 and  $\beta = .06$ ,  $p = .27$  for Study 2), T2 social support ( $\beta = .05$ ,  $p = .42$  for Study 1 and  $\beta = -.05$ ,  $p = .45$  for Study 2), and T2 secondary traumatic growth ( $\beta = -.11$ ,  $p = .18$  for Study 1 and  $\beta = -.06$ ,  $p = .32$  for Study 2); (b) the effects of T1 social support on T1 self-efficacy ( $\beta = .18$ ,  $p = .03$  for Study 1 and  $\beta = .15$ ,  $p = .01$  for Study 2), T2 social support ( $\beta = .77$ ,  $p < .001$  for Study 1 and  $\beta = .29$ ,  $p < .001$  for Study 2), and T2 secondary traumatic growth ( $\beta = -.11$ ,  $p = .41$  for Study 1 and  $\beta = .01$ ,  $p = .83$  for Study 2); (c) the effects of T1 secondary traumatic growth on T1 self-efficacy ( $\beta = .28$ ,  $p < .001$  for Study 1 and  $\beta = .13$ ,  $p = .02$  for Study 2), T2 social support ( $\beta = -.05$ ,  $p = .44$  for Study 1 and  $\beta = -.07$ ,  $p = .28$  for Study 2), and T2 secondary traumatic growth ( $\beta = .51$ ,  $p < .001$  for Study 1 and  $\beta = .58$ ,  $p < .001$  for Study 2). Values displayed only for completers. \*\*\* $p < .001$ . \*\* $p < .01$ . \* $p < .05$ .

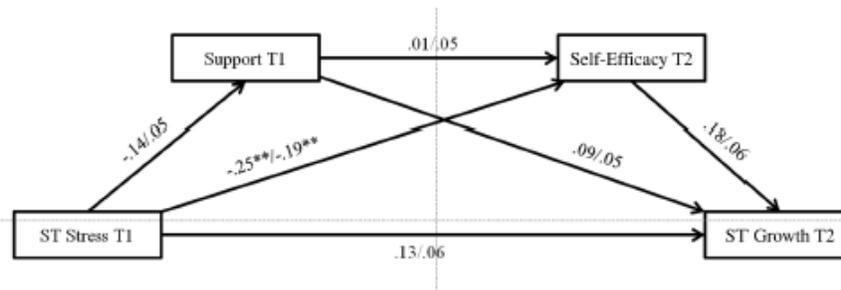
intervals for  $B$ s using PROCESS. To obtain  $B$  for a specific indirect pathway, all variables, including the independent, mediators, dependent, and covariate variables, were entered into one equation. For the cultivation hypothesis (Model 1), secondary trauma self-efficacy (T1) and perceived social support (T2) were entered into the equation in a serial order to test if secondary trauma self-efficacy (T1) has a delayed effect on perceived social support (T2; see Figure 1). Indirect exposure to trauma (T1), perceived social support (T1), and secondary traumatic growth (T1) were entered into the equation as covariates. The enabling hypothesis model (Model 2) used the same set of assumptions and variables, except the sequential order of mediator variables was altered: perceived social support (T1) was assumed to predict secondary trauma self-efficacy (T2; see Figure 2). For the enabling hypothesis, indirect exposure to trauma (T1), secondary trauma self-efficacy (T1), and secondary traumatic growth (T1) were controlled for in the equation.

Missing data for all variables were replaced using the multiple imputation method (Schafer & Graham, 2002; Streiner, 2002). In the first step, data missing for those who completed both T1 and T2 was imputed. Secondary traumatic growth (T1 and T2), STS (T1 and T2), self-efficacy (T1 and T2), social support (T1 and T2) and secondary trauma exposure frequency (T1) were included in the regression method for multiple imputation. In total, 0.48% of the values at T1 and 0.23% of the values at T2 were replaced. In the second step, data missing for dropouts (55.46% of the T2 values) were imputed. Data obtained at T1, including exposure, support, efficacy, growth, STS, and sociodemographic variables as well as completer/dropout status were missing completely at random (MCAR), Little's  $\chi^2(16) = 11.74$ ,  $p = .76$ . Analyses for T2 also confirmed MCAR pattern of missing data, Little's  $\chi^2(6) = 4.25$ ,  $p = .64$ .

The analyses were conducted initially for completers. Next, we repeated the estimation of  $B$  coefficients, their confidence intervals, and effect sizes using data from completers and imputed data of those who dropped out at T2 (i.e., completers and dropouts).

## Results

**Preliminary analyses.** Table 2 displays means, standard deviations, and Pearson's correlations of all variables measured at T1 and T2. Attrition analysis showed no significant differences



**Figure 2.** Model 2, referring to the enabling hypothesis, being tested with the multiple mediation analysis. *Note.* A value before the slash is standardized regression coefficient (i.e.,  $\beta$ ) for Study 1, and value after the slash is  $\beta$  for Study 2. T1 = Time 1; T2 = Time 2; ST Stress = secondary traumatic stress; ST Growth = secondary traumatic growth. Additionally, the following effects were controlled in the analyses: (a) the effects of T1 indirect exposure on T1 social support ( $\beta = .03$ ,  $p = .72$  for Study 1 and  $\beta = -.11$ ,  $p = .14$  for Study 2), T2 self-efficacy ( $\beta = .01$ ,  $p = .92$  for Study 1 and  $\beta = -.06$ ,  $p = .31$  for Study 2), and T2 secondary traumatic growth ( $\beta = -.10$ ,  $p = .23$  for Study 1 and  $\beta = -.07$ ,  $p = .30$  for Study 2); (b) the effects of T1 secondary trauma self-efficacy on T1 social support ( $\beta = .25$ ,  $p = .03$  for Study 1 and  $\beta = .27$ ,  $p = .01$  for Study 2), T2 self-efficacy ( $\beta = .48$ ,  $p < .001$  for Study 1 and  $\beta = .51$ ,  $p < .001$  for Study 2), and T2 secondary traumatic growth ( $\beta = .04$ ,  $p = .69$  for Study 1 and  $\beta = .04$ ,  $p = .71$  for Study 2); (c) the effects of T1 secondary traumatic growth on T1 social support ( $\beta = .09$ ,  $p = .33$  for Study 1 and  $\beta = .08$ ,  $p = .29$  for Study 2), T2 self-efficacy ( $\beta = .03$ ,  $p = .68$  for Study 1 and  $\beta = .01$ ,  $p = .82$  for Study 2), and T2 secondary traumatic growth ( $\beta = .50$ ,  $p < .001$  for Study 1 and  $\beta = .57$ ,  $p < .001$  for Study 2). Values displayed only for completers. \*\*\* $p < .001$ . \*\* $p < .01$ . \* $p < .05$ .

between completers and dropouts in terms of STS at T1,  $t(291) = 0.17$ ,  $p = .87$ ; secondary trauma self-efficacy at T1,  $t(291) = 0.29$ ,  $p = .77$ ; perceived social support at T1,  $t(291) = 0.08$ ,  $p = .94$ ; secondary traumatic growth at T1,  $t(291) = 1.25$ ,  $p = .21$ ; indirect exposure to trauma,  $t(291) = 0.65$ ,  $p = .52$ ; age,  $t(287) = 1.61$ ,  $p = .11$ ; gender,  $\chi^2(1) = 2.38$ ,  $p = .12$ ; relationship status,  $\chi^2(1) = 2.82$ ,  $p = .09$ ; profession,  $\chi^2(3) = 5.79$ ,  $p = .12$ ; and education,  $\chi^2(4) = 2.48$ ,  $p = .65$ .

**Multiple mediation analyses.** To test the four hypotheses, two multiple mediation models were analyzed. Model 1 was designed to verify Hypothesis 1 (with self-efficacy at T1 as a mediator), Hypothesis 2 (with social support at T2 as a mediator), and Hypothesis 3 (i.e., cultivation process). In Model 2, Hypotheses 1 and 2 were tested again (but with mediators measured at T2 and T1, respectively), and Hypothesis 4 (i.e., enabling process) was evaluated.

### Model 1

First, data obtained from completers were analyzed. The multiple mediation analysis for Model 1 showed that Pathway 1, testing the simple mediation effect of secondary trauma self-efficacy at T1 (Hypothesis 1) and Pathway 2 testing the simple mediation role of perceived social support at T2 (Hypothesis 2), were not significant (Table 3).

Second, analyses conducted with dropout values imputed showed that Pathway 1 was significant (Table 3). In particular, higher STS (T1) was related to lower secondary trauma self-efficacy (T1),  $\beta = -.60$ ,  $p = .001$ , and lower self-efficacy (T1) predicted lower secondary traumatic growth (T2),  $\beta = .11$ ,  $p = .04$ . Furthermore, Pathway 2 was significant (Table 3). Higher STS (T1) explained higher perceived social support (T2),  $\beta = .07$ ,  $p = .06$ , which in turn was associated with lower secondary traumatic growth (T2),  $\beta = .32$ ,  $p = .001$ .

**Testing for the cultivation hypothesis.** When the completers' data were analyzed, Pathway 3 of Model 1 was significant, indicating that the cultivation hypothesis was supported (Table 3). Figure 1 shows standardized regression coefficients for each path in Model. After

**Table 2**  
Means, Standard Deviations, Pearson's Correlations Among Study Variables for Study 1 and Study 2

Variable	Mean (SD)									<i>t</i>		
	1	2	3	4	5	6	7	8	9		Study 1	Study 2
1. Indirect exposure	–	.12*	.14	–.03	–.06	–.02	–.08	.10	.01	6.18 (1.03)	4.65 (1.72)	13.09***
2. STS T1	–.03	–	.79***	–.16**	–.10	–.65***	–.54***	–.06	–.05	1.88 (0.66)	2.32 (0.65)	9.21***
3. STS T2	.02	.76***	–	–.15*	–.20**	–.60***	–.61***	–.03	.01	1.78 (0.65)	2.28 (0.67)	6.38***
4. Social support T1	.11	–.34**	–.23*	–	.36***	.25***	.22**	.12*	.14	5.77 (1.07)	5.00 (1.50)	7.17***
5. Social support T2	.08	–.20*	–.27**	.80***	–	.34***	.36***	.02	.17*	5.68 (1.16)	5.02 (1.30)	4.47***
6. ST self-efficacy T1	.03	–.55***	–.45***	.33***	.37***	–	.65***	.15*	.16*	6.09 (0.77)	5.19 (0.94)	12.72***
7. ST self-efficacy T2	.05	–.49***	–.57***	.25**	.35***	.62***	–	.13	.14	6.18 (0.84)	5.23 (0.90)	9.15***
8. ST Growth T1	.11	.10	.18	.13*	.11	.13*	.13	–	.58***	2.35 (1.28)	2.97 (1.07)	6.39***
9. ST Growth T2	–.06	.06	.00	.19*	.25**	.25**	.23*	.55***	–	2.25 (1.29)	3.01 (0.98)	5.80***

*Note.* T1 = Time 1; T2 = Time 2; Indirect Exposure = indirect exposure to trauma; STS = secondary traumatic stress; ST Self-Efficacy = secondary trauma self-efficacy; ST Growth = secondary traumatic growth. Correlations below the diagonal show values for Study 1 ( $N_{T1} = 298, N_{T2} = 189$ ). Data presented for those who participated in Time 1 and Time 2 assessments. \*\*\* $p < .001$ . \*\* $p < .01$ . \* $p < .05$ .

**Table 3**  
*Mediating Effects of Perceived Social Support and Secondary Trauma Self-Efficacy in the Relationship Between Secondary Traumatic Stress and Secondary Traumatic Growth*

Indirect effects pathways	B	SE	BC 95% CI		Effect size <i>ab<sub>ps</sub></i>
			Lower	Higher	
<b>Study 1: Model 1</b>					
1. STS T1→ST self-efficacy T1→ST growth T2	-.079/ <b>-.088</b>	.095/ .043	-.289/ <b>-.182</b>	.081/ <b>-.013</b>	-.061/ <b>-.088</b>
2. STS T1→Support T2→ST growth T2	<b>-.042/ .033</b>	.046/ .020	-.022/ .004	.171/ .088	.033/ .033
3. Cultivation hypothesis: STS T1→ST self-efficacy T1→Support T2→ST growth T2	<b>-.041/ <b>-.026</b></b>	.029/ .014	-.136/ <b>-.064</b>	-.002/ <b>-.006</b>	-.032/ <b>-.026</b>
<b>Study 1: Model 2</b>					
4. STS T1→ST self-efficacy T2→ST growth T2	<b>-.100/ <b>-.064</b></b>	.056/ .026	-.231/ <b>-.124</b>	-.008/ <b>-.018</b>	-.077/ <b>-.063</b>
5. STS T1→Support T1→ST growth T2	<b>-.030/ <b>-.042</b></b>	.045/ .025	-.163/ <b>-.100</b>	.021/ <b>-.003</b>	-.024/ <b>-.042</b>
6. Enabling hypothesis: STS T1→Support T1→ST self-efficacy T2→ST growth T2	-.001/ <b>-.000</b>	.006/ .004	-.022/ <b>-.009</b>	.006/ <b>.007</b>	-.001/ <b>.000</b>
<b>Study 2: Model 1</b>					
7. STS T1→ST self-efficacy T1→ST growth T2	-.001/ <b>-.011</b>	.072/ .049	-.148/ <b>-.093</b>	.134/ .103	-.001/ <b>-.009</b>
8. STS T1→Support T2→ST growth T2	<b>-.048/ <b>-.046</b></b>	.029/ .023	.008/ .013	.130/ .109	.048/ .053
9. Cultivation hypothesis: STS T1→ST self-efficacy T1→Support T2→ST growth T2	<b>-.058/ <b>-.053</b></b>	.029/ .023	-.137/ <b>-.110</b>	-.015/ <b>-.017</b>	-.058/ <b>-.060</b>
<b>Study 2: Model 2</b>					
10. STS T1→ST self-efficacy T2→ST growth T2	-.016/ <b>-.012</b>	.025/ .017	-.081/ <b>-.054</b>	.023/ .016	-.016/ <b>-.012</b>
11. STS T1→Support T1→ST growth T2	<b>-.004/ <b>-.000</b></b>	.012/ .010	-.009/ <b>-.020</b>	.051/ .021	.004/ <b>.000</b>
12. Enabling hypothesis: STS T1→Support T1→SE self-efficacy T2→ST growth T2	<b>.000/ <b>.000</b></b>	.001/ .001	-.000/ <b>-.001</b>	.006/ <b>.001</b>	.000/ <b>.000</b>

*Note:* SE = standard error; T1 = Time 1; T2 = Time 2; STS = secondary traumatic stress; ST self-efficacy = secondary trauma self-efficacy; Support = perceived social support; ST growth = secondary traumatic growth. Values before the slash were calculated for completers. Values after the slash were calculated using data from completers and T2 dropouts whose values were imputed. Values of indirect effect coefficient (*B*) presented in bold are significant. Each bootstrap was based on 5,000 repetitions. Bias corrected (BC) confidence intervals (CI) that do not include zero indicate a significant indirect effect.

controlling for the effects of three covariates (i.e., T1 indirect exposure to trauma, T1 social support, and T1 secondary traumatic growth), high secondary traumatic stress (T1) was related to lower secondary trauma self-efficacy (T1), which in turn predicted lower social support (T2), and then lower social support (T2) was related to lower secondary traumatic growth (T2).

Similar results, confirming the cultivation hypothesis, were obtained when imputed data for dropouts were included in the analysis (Table 3). Again, Pathway 3 of Model 1 was significant.

### *Model 2*

When data obtained from the completers were analyzed, the multiple mediation analysis for Model 2 showed that Pathway 4 was significant (Table 3). Higher STS (T1) predicted lower secondary trauma self-efficacy (T2), and lower self-efficacy (T2) was related to lower secondary traumatic growth (T2; see Figure 2). Pathway 5, testing the mediation effect of social support (T1), was not significant (Table 3) when the analyses were conducted just for completers.

In the analysis accounting for data from completers and imputed dropouts, Pathway 4 was significant (Table 3). High STS (T1) predicted low self-efficacy (T2),  $\beta = -.21, p = .001$ , and high self-efficacy (T2) was related to high secondary traumatic growth (T2),  $\beta = .20, p = .01$ . Pathway 5 was also significant (Table 3). Higher STS (T1) was associated with lower social support (T1),  $\beta = -.21, p = .001$ , which in turn predicted lower secondary traumatic growth (T2),  $\beta = .11, p = .03$ .

*Testing for the enabling hypothesis.* When data obtained from the completers were analyzed, Pathway 6, representing the enabling hypothesis, was not significant (Table 3). Figure 2 shows standardized regression coefficients for each path. The indirect effect testing enabling hypothesis was not significant when dropouts' imputed data were included in the analysis (Table 3). In sum, the enabling hypothesis was not supported.

### *Discussion*

Results of Study 1 provided support for the cultivation hypothesis stating that secondary trauma self-efficacy facilitates perceived social support. These two variables constitute a specific order of chained mediators in the relationship between secondary traumatic stress and secondary traumatic growth. The enabling hypothesis was not supported. Further, analyses conducted for completers and analyses including imputed dropout values yielded similar results: The cultivation hypothesis should be accepted, whereas the enabling hypothesis should be rejected. Inconsistency of the results referring to the mediating function of self-efficacy (Hypothesis 1) and social support (Hypothesis 2) requires further investigation. In general, analyses provide tentative support for simple mediating effects of self-efficacy beliefs. The indirect effects of self-efficacy, obtained in simple mediation analysis, were larger than the indirect effects observed for social support. The findings of Study 1 should be replicated on a different sample to confirm that the findings are not specific for behavioral and mental healthcare providers working with traumatized military populations.

## Study 2

To rectify the limitation of Study 1 related to a circumscribed client population, all hypotheses were tested again in a longitudinal study among professionals providing services to traumatized civilian populations. Additionally, these professionals were working within a different cultural context, in Poland. Thus, Study 2 was also designed to provide cross-cultural and clinical population validation of the initial findings.

### *Method*

*Participants.* Healthcare and social workers providing services for civilian survivors of traumatic events were enrolled in the study. Inclusion criteria were (a) working at least one year

as a social worker or healthcare provider (e.g., physician, nurse, or paramedic); (b) providing services for a civilian population suffering from trauma; and (c) being indirectly exposed to trauma through interaction with clients. A total of 298 respondents (69 males, 23.2%) who met these criteria completed the online survey at T1. See Table 1 for sample demographic information. Participants were indirectly exposed to different types of traumatic events at work, including life-threatening illness or injury (89.3%), physical assault (87.6%), sudden unexpected death of someone close (82.6%), transportation accidents (73.5%), sexual assault (52.7%), and natural disasters (30.2%). Only 9.4% of participants were indirectly exposed to military-related trauma. Additionally, 77.9% of participants reported a lifetime direct exposure to a traumatic event. Of those who completed the T1 assessment, 189 participants (36 males, 19%) took part in the T2 measurement.

*Measures.* Respondents completed the same set of measures as in Study 1. These included (a) the Secondary Traumatic Stress Scale ( $\alpha = .91$  for T1 and  $.93$  for T2); (b) the Secondary Trauma Self-Efficacy Scale ( $\alpha = .89$  for T1 and  $.88$  for T2); (c) the Multidimensional Scale of Perceived Social Support ( $\alpha = .96$  for both T1 and T2); and (d) a modified version of the Posttraumatic Growth Inventory-Short Form ( $\alpha = .92$  for Time 1 and  $.91$  for Time 2). As in Study 1, only total scores were used for the questionnaires, and the indirect exposure to trauma was measured with one item (frequency of exposure) in the Secondary Trauma Exposure Scale. Instructions for all instruments were modified so that participants were asked to respond to the items in the context of work-related indirect exposure to trauma. The Polish versions of measures were prepared using the back-translation procedure.

*Procedure.* The study was approved by the IRB at the appropriate institution in Poland. Data were collected with a web-based survey. Participants were recruited through professional and online social networks dedicated to specialists working with traumatized clients. Those who volunteered were informed about the study aims, provided informed consent, and filled out the online questionnaires. If participants agreed to take part in the T2 survey, they received an e-mail invitation. The mean time that elapsed between the T1 and T2 was 162.04 days ( $SD = 39.72$ ).

*Analytical procedures.* Missing data were replaced using the multiple imputation method with the same procedures as in Study 1 (Schafer & Graham, 2002; Streiner, 2002). As in Study 1, the data were missing completely at random at T1, Little's  $\chi^2(12) = 14.73$ ,  $p = .26$ , and at T2, Little's  $\chi^2(9) = 13.88$ ,  $p = .13$ . For completers-only analyses, 1.17% of the T1 values were replaced and 0.40% of the T2 values were replaced. When data for completers and dropouts were analyzed, 36.3% of the T2 values were replaced. A series of two multiple mediation analyses were performed using the same procedure and software as in Study 1.

## Results

*Preliminary analyses.* Table 2 displays the means, standard deviations, and correlations for the study variables. Attrition analysis showed no significant differences between completers and dropouts at T1 in terms of STS,  $t(296) = 0.61$ ,  $p = .54$ , secondary trauma self-efficacy,  $t(296) = 0.57$ ,  $p = .57$ , perceived social support,  $t(296) = 0.63$ ,  $p = .53$ , secondary traumatic growth,  $t(296) = 0.86$ ,  $p = .39$ , indirect trauma exposure,  $t(296) = 1.88$ ,  $p = .06$ , age,  $t(269) = 0.76$ ,  $p = .45$ , intimate relationship status,  $\chi^2(1) = 3.61$ ,  $p = .06$ , profession,  $\chi^2(2) = 1.77$ ,  $p = .41$ , and education,  $\chi^2(3) = 5.60$ ,  $p = .13$ . However, compared to dropouts, completers were more often women than men,  $\chi^2(1) = 4.57$ ,  $p = .03$ .

Across the study variables' mean levels obtained by participants in Studies 1 and 2 were compared (see Table 2). In Study 1, respondents reported significantly higher frequency of indirect exposure to trauma, higher levels of social support (T1 and T2) and secondary trauma self-efficacy (T1 and T2), significantly lower secondary traumatic growth (T1 and T2), and lower STS (T1 and T2) compared to professionals enrolled in Study 2.

*Multiple mediation analyses.* The cultivation and enabling hypotheses as well as simple mediation hypotheses were tested with the same two multiple mediation models as in Study 1.

#### *Model 1*

First, data obtained from the completers were analyzed. Pathway 7, testing the simple mediation effect of T1 secondary trauma self-efficacy (Hypothesis 1), was not significant (Table 3). In contrast, the simple mediation effect of perceived social support (T2) was found to be significant in the relationship between STS at T1 and secondary traumatic growth at T2 (Hypothesis 2; see Table 3, Pathway 8). After accounting for the effects of three T1 covariates, STS (T1) predicted increased perceived social support (T2) 2, which in turn was associated with increased levels of secondary traumatic growth (T2; see Figure 1). Next, analyses were repeated with data obtained from completers and dropouts (after applying multiple imputation procedures). A similar pattern of results emerged (Table 3).

*Testing for the cultivation hypothesis.* When completers' data were analyzed, results of the multiple mediation analysis provided support for Hypothesis 3. Please refer to the confidence intervals for Pathway 9 in Table 3. After partialling out the effects of the three covariates, T1 STS was related to lower self-efficacy (T1), and then lower self-efficacy (T1) contributed to the lower level of social support (T2), which in turn was related to lower levels of secondary traumatic growth (T2; see Figure 2). Similar results, confirming the cultivation hypothesis, were obtained when imputed data for dropouts were included in the analysis (Table 3).

#### *Model 2*

Results of the simple mediation analysis (conducted for completers) indicated that neither secondary trauma self-efficacy (T2) nor perceived social support (T1) mediated the relationship between STS at T1 and secondary traumatic growth at T2 (see Table 3, Pathways 10 and 11). Similar results were obtained when imputed dropouts' data were included in the analysis (Table 3). Thus, Hypotheses 1 and 2 were not supported.

*Testing for enabling the hypothesis.* The analyses conducted for completers showed that Pathway 12, testing the enabling process (Hypothesis 4), was not significant (see Table 3). When imputed data for dropouts were included in the analysis, similar results for Pathway 12 were obtained (Table 3). The enabling hypothesis was not supported.

#### *Discussion*

In line with findings obtained in Study 1, results of Study 2 supported the cultivation hypothesis but not the enabling hypothesis. Further, analyses conducted for completers and analyses accounting for dropouts' imputed data yielded consistent results. There was no support for the hypothesis assuming simple mediating effect of self-efficacy, whereas the simple mediating effects of social support were found only if support was measured at T2 (at the same time when secondary traumatic growth was assessed).

### General Discussion

This two-study investigation examined the indirect effects of STS on secondary traumatic growth via perceived social support and secondary trauma self-efficacy. These two mediators were assumed to operate either independently (Hypotheses 1 and 2) or sequentially, that is, with secondary trauma self-efficacy cultivating social support (Hypothesis 3), and/or social support enabling self-efficacy beliefs (Hypothesis 4). Taking into account the findings in both longitudinal studies, general support was obtained for the cultivation hypothesis in the context of the relationship between secondary traumatic stress and secondary traumatic growth.

The partial corroboration of Hypothesis 1 was found in Study 1 when self-efficacy was measured at T2 (Pathway 4); Hypothesis 2 was confirmed in Study 2 when social support was assessed at T2 (Pathway 8). These results, obtained for a group of completers, may suggest that self-efficacy and social support are more likely to mediate the STS—secondary traumatic growth relationship if these mediators are measured more closely to the time when a dependent variable is assessed. This observation needs further investigation because it may shed light on contradictory results of the cross-sectional studies testing the mediating effects of social support or self-efficacy (e.g., Lincoln, Chatters, & Taylor, 2005; Pietrzak et al., 2010).

Another matter requiring further attention is an explanation why we have found partial collaboration for Hypothesis 1 in Study 1 (i.e., for a simple mediating effect of self-efficacy) and for Hypothesis 2 in Study 2 (i.e., for a simple mediating effect of social support). The two primary differences between the two studies were the type of indirect exposure (military versus nonmilitary trauma) and the country where study was conducted (U.S. vs. Poland). Although we do not know if either of these factors may be responsible for the inconsistent results in our studies, there is empirical evidence that direct exposure to battlefield trauma may lead to different outcomes than other types of traumatic exposure, such as civilian terrorism, work, or traffic accidents (Amir, Kaplan, & Kotler, 1996). There is also evidence from studies on direct exposure to trauma that PTSD affects self-related cognitions, such as self-efficacy, more in individualistic cultures (typically Western countries) than in collectivistic cultures (typically Eastern countries; Jobson & O’Kearney, 2008). Moreover, collectivism may function through social support reducing negative consequences of trauma (Moscardino, Scimin, Capello, & Altoè, 2010). The type of indirect exposure and cultural values, such as individualism-collectivism, need to be investigated further as possible factors facilitating or hindering the effects of self-efficacy and social support.

Both studies show robust evidence supporting the cultivation hypothesis. In the context of the relationship between secondary traumatic stress and secondary traumatic growth, self-efficacy facilitated perceived social support when both mediating factors were contextualized in trauma-related work settings. Prior to our study, the cultivation hypothesis has not been tested in the context of secondary traumatization, and it has not been consistently confirmed in other research contexts (cf. Schwarzer & Knoll, 2007). An explanation for the supportive findings with the cultivation hypothesis is that the mediating factors measured were matched to the type of stressful event (i.e., indirect exposure) and the type of outcome (i.e., secondary traumatic growth; Kaniasty & Norris, 1992).

The findings regarding the cultivation hypothesis may have implications for SCT (Bandura, 1997). Social cognitive theory proposes that self-efficacy is a key factor facilitating adaptation in challenging situations. Our results suggest that enhancing self-efficacy helps a long-term adaptational process by facilitating social support. In contrast, enhancing social support without regard for perceptions of self-efficacy may have limited long-term effect on positive outcomes (e.g., perceptions of growth). These results indicate that the interplay between trauma-related consequences and environmental and individual factors may be time-sensitive. Other studies showed that social support may not affect distress one week after a traumatic event; however, it may reduce distress several weeks later (Cook & Bickman, 1990). Moreover, changes in self-efficacy a couple of weeks after trauma have shown to be predictive of subsequent distress 3 months later (Benight, Cieslak, Molton, & Johnson, 2008). Future studies need to consider the time sensitive nature of adaptation processes following indirect exposure to trauma.

The support for of the cultivation hypothesis obtained in both studies may have some practical implications for healthcare workers offering services for traumatized populations. As there are no doubts that offering these kinds of services leads to a higher risk of secondary traumatic stress (Bride et al., 2004), it is important to know what psychological processes may be involved in translating this negative outcome into a positive one (e.g., secondary traumatic growth). Healthcare workers who are at risk for indirect trauma exposure should be offered education about the importance of enhancing specific self-efficacy perceptions and about the role of efficacy beliefs in fostering secondary traumatic growth. However, education alone is rarely enough to promote self-efficacy (Bandura, 1997). Opportunities for skill attainment in the management of STS reactions combined with education will likely yield more empowerment and thus reduce the risk of a negative resource loss spiral (Hobfoll & Lilly, 1993).

Our research has some limitations. Although both of our studies were longitudinal, there were only two measurement points, whereas a four-wave investigation would be optimal to test a sequential multiple mediation model with two mediators. Regarding a methodological limitation related to a longitudinal design, the research procedures did not allow us to explain reasons for dropouts at T2. Furthermore, structural equation modeling could be used for testing the mediational hypotheses and comparing the goodness of fit for Models 1 and 2. Unfortunately, that would require a bigger sample size, which was difficult to achieve considering the specificity of investigated groups. Statistical procedures employed in this article allowed for a robust estimation of indirect effects with the optimal ratio between a sample size and the number of analyzed parameters. Although our assumption was that secondary traumatic growth is a positive outcome and reflects processes of adaptation after indirect exposure to trauma, there are studies indicating that posttraumatic growth may be dysfunctional (Luszczynska et al., 2012). Future investigation of this issue in the context of secondary traumatic growth is required.

Finally, recent research has highlighted the interplay among self-referent thoughts, the presence and absence of positive and negative social support, and secondary traumatic growth (McCormack, Hagger, & Joseph, 2011). Future investigation needs to account for presence (and absence) of both positive and negative support in the relationship between self-efficacy and secondary traumatic growth.

Summarizing, this is the first longitudinal two-study investigation of how social support and self-efficacy operate as mediators between secondary traumatic stress and secondary traumatic growth. Both studies consistently supported the cultivation hypothesis, indicating that self-efficacy being affected by secondary traumatic stress facilitates social support and this indirect pathway contributes to development of secondary traumatic growth.

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## Appendix 14

# Secondary Trauma Self-Efficacy scale – psychometric evaluation

ABSTRACT

**Background:** The aim of our studies was to evaluate the psychometric properties of a new measure of self-efficacy, referring to coping with secondary trauma experiences - the Secondary Trauma Self-Efficacy (STSE) scale.

**Methods:** Study 1 enrolled professionals ( $N = 247$ ) providing trauma therapy for military clients in the U.S. Study 2 was conducted among health care and social workers ( $N = 306$  at Time 1,  $N = 193$  at Time 2) providing services for trauma survivors in Poland.

**Findings:** The results of both studies indicated unidimensionality of the scale, its good reliability, good validity, and invariance across two language versions. As expected, STSE correlated highly or moderately with secondary traumatic stress. The associations between STSE and perceived social support, secondary traumatic growth, negative beliefs about the world and self were either moderate or low.

**Discussion:** STSE may constitute a key protective resource promoting well-being among people working with trauma victims.

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## INTRODUCTION

Professionals working with trauma survivors are at increased risk for negative psychological outcomes, such as secondary traumatic stress. Secondary traumatic stress (STS) is defined as "intrusion, avoidance, and arousal symptoms associated with indirect exposure to traumatic events via one's professional relationships with traumatized clients" (Bride et al., 2004, p.28).

Self-efficacy may be seen as an important determinant of health-related outcomes of a traumatic event (Benight & Bandura, 2004) - a systematic review (Luszczynska, Benight, & Cieslak, 2009) confirmed "large significant negative associations between self-efficacy and negative consequences of traumatization, such as posttraumatic stress disorder" (Cieslak et al., 2013, p. 4). Although self-efficacy should be assessed context-specific, most studies investigating self-efficacy and health outcomes of secondary trauma exposure assessed work-related self-efficacy.

Because there is no existing measure of secondary trauma self-efficacy, there is also a lack of knowledge about the relationships between self-efficacy and outcomes of secondary trauma exposure among professionals working with trauma survivors. To fill this gap in our study we evaluated the psychometric properties of a new measure of self-efficacy, referring to coping with secondary trauma experiences - the Secondary Trauma Self-Efficacy scale. Secondary trauma self-efficacy (STSE) is defined here as "perceived ability to cope with the challenging demands resulting from work with traumatized clients and perceived ability to deal with the secondary traumatic stress symptoms" (Cieslak et al., 2013, p. 5).

## OBJECTIVE

The aim of our study was to evaluate the psychometric properties of the Secondary Trauma Self-Efficacy (STSE) scale.

## METHODS

### Participants:

**Study 1:** mental healthcare providers working with returning soldiers in the United States,  $N = 247$  (gender: 82 males, 33.2%; age:  $M = 48.59$ ,  $SD = 13.02$ )

**Study 2:** health care and social workers providing services for civilian survivors of traumatic events  
**Time 1:**  $N = 306$  participants (gender: 71 males, 23.2%; age:  $M = 35.41$ ;  $SD = 8.59$ );  
**Time 2:**  $N = 193$  (gender: 37 males, 19.2%; age:  $M = 35.05$ ;  $SD = 8.10$ ).

Table 1  
Pearson's Correlations among the Study Variables

Measure	1	2	3	4	5	6	7	8
1. Secondary trauma self-efficacy (STSE)								
2. Perceived social support	.32***							
3. Secondary traumatic stress	-.54***	-.33***						
4. Secondary traumatic growth	.14***	.14***	-.10***					
5. Negative cognitions: World	-.32***	.30***	.47***	-.08***				
6. Negative cognitions: Self	-.51***	-.38***	.56***	-.10***	.52***			
7. Direct trauma exposure	.05	-.11	.12***	.10	.16***	-.12*		
8. STSE (direct exposure partialled out)		.38***	-.58***	.15*	-.32***	-.49***		

Note. Correlations in upper diagonal region show values for Polish data (Study 2). Correlations in lower diagonal region show values for U.S. data (Study 1). Direct trauma exposure in Study 1 represents the number of direct trauma experiences; direct trauma exposure in Study 2 represents whether participants have experienced any of direct traumatic events (with direct exposure dummy coded using 0/100 and 1/100). \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 2  
Goodness-of-Fit Statistics for Tests of Invariance of Factor Structure for Study 1 and Study 2

Model Description	$\chi^2$	df	RMSEA	CFI	SRMR	GFI	NFI	IFI	ANFI
Hypothesized model (unconstrained)	51.19	2.01	.043	.966	.036	.974	.972	-	-
Factor loadings, variances, and covariance constrained equal	140.20	3.47	.067	.945	.060	.937	.925	90.02***	.048
Factor loadings constrained equal	62.07	1.87	.042	.963	.045	.969	.967	10.88***	.006
Variances constrained equal	129.10	3.69	.070	.949	.053	.942	.932	76.91***	.041
Covariance constrained equal	52.59	1.95	.041	.966	.036	.974	.972	0.40***	.000
Factor loadings and covariance constrained equal (final model)	62.91	1.91	.041	.964	.045	.969	.967	10.72***	.006

Note. The  $\Delta\chi^2$  indicates a change in  $\chi^2$  from the hypothesized model. \*\*\*  $p < .001$ . A significant  $\Delta\chi^2$  value indicates that the model was not good fit for the hypothesized model.



Figure 1. Final two-group confirmatory factor analysis model of the Secondary Trauma Self-Efficacy scale.

Note. Standardized regression weights ( $\beta$ , factor loadings), variances, and covariances between error variances are presented. In the final model factor loadings and covariances are constrained to be equal in Study 1 and Study 2. Numbers before the slash refer to Study 1; numbers after the slash refer to Study 2. All parameters significant at  $p < .001$ .

## Measures:

- Secondary Trauma Self-Efficacy. Secondary Trauma Self-Efficacy Scale (Cieslak et al., 2013) - Study 1 ( $\alpha = .87$ ) and Study 2 ( $\alpha = .89$  at Time 1,  $\alpha = .88$  at Time 2)
- Secondary Trauma Exposure. Secondary Trauma Exposure Scale (Cieslak et al., 2012) - Study 1 and Study 2
- Secondary Traumatic Stress. Secondary Traumatic Stress Scale (Bride et al., 2004) - Study 1 ( $\alpha = .94$ ) and Study 2 ( $\alpha = .93$ )
- Perceived Social Support. Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) - Study 1 ( $\alpha = .94$ ) and Study 2 ( $\alpha = .96$ )
- Negative Cognitions. Posttraumatic Cognition Inventory (Foa et al., 1999) - only Study 1 (total score:  $\alpha = .89$ , NC about the World;  $\alpha = .88$ , NC about Self;  $\alpha = .85$ )
- Secondary Traumatic Growth. Posttraumatic Growth Inventory-Short Form (Cann et al., 2010) - Study 1 ( $\alpha = .92$ ) and Study 2 ( $\alpha = .92$ )

## RESULTS

✓ The results of exploratory and confirmatory factor analysis showed unidimensionality of the STSE scale in both studies.

Principal components analysis: Study 1: one component accounting for 56.80% of the variance ( $\lambda_{\text{eigenvalue}} = 3.88$ ). Factor loadings of the items ranged between .71 and .83. Study 2: one component accounting for 61.67% of the variance ( $\lambda_{\text{eigenvalue}} = 4.33$ ). Factor loadings for the seven items ranged between .64 and .87.

Confirmatory factor analysis: Study 1: RMSEA = .071 (90% lower and upper confidence limits: .037 and .106), CFI = .973, SRMR = .036 (modified one-factor unconstrained model - items 4 and 5 covaried). Study 2: RMSEA = .050 (90% lower and upper confidence limits: .006, .093), CFI = .961, SRMR = .023 (modified one-factor unconstrained model - items 4 and 5 covaried).

✓ The results indicated good internal consistency of the STSE scale and its good stability over time (Study 1:  $\alpha = .87$ . Study 2:  $\alpha = .89$  at Time 1,  $\alpha = .88$  at Time 2); the association between the STSE scores at Time 1 and Time 2 in Study 2:  $r(191) = .65$ ,  $p < .001$

✓ Secondary trauma self-efficacy correlated highly or moderately with secondary traumatic stress (see Table 2)

✓ The associations between secondary trauma self-efficacy and perceived social support, secondary traumatic growth, negative beliefs about the world and self were either moderate or low (see Table 2)

✓ The STSE factor structure and pattern of correlations with the validity measures were invariant across two studies, which indicated that the STSE scale may be a culturally unbiased instrument (see Figure 1 and Table 2)

## CONCLUSION

The results confirmed good psychometric properties of the Secondary Trauma Self-Efficacy (STSE) scale and verify its theoretically assumed unidimensional structure (Bandura, 1997). They also provide evidence that the STSE scale is a robust measure and suggest that secondary trauma self-efficacy may have similar properties and operate similarly across different cultural contexts. Secondary trauma self-efficacy may constitute a key protective resource promoting well-being among people working with trauma survivors - we propose a new measure to assess it.

For further information read: Cieslak, R., Shoji, K., Luszczynska, A., Taylor, S., Rogala, A., & Benight, C. C. (2013). Secondary trauma self-efficacy: Concept and its measurement. *Psychological Assessment*, doi: 10.1037/a0028447 <http://psapnet.apa.org/benight20131507-001> or contact: [anna.rogala@swps.edu.pl](mailto:anna.rogala@swps.edu.pl)



## Appendix 15

# Effects of Social Support and Self-Efficacy on Secondary Traumatic Growth

Judith Bock, Kotaro Shoji, Roman Cieslak, & Charles C. Benight

### Abstract

This two-study longitudinal investigation examined the indirect effects of secondary traumatic stress (STS) on secondary traumatic growth via two mediators: perceived social support and secondary trauma self-efficacy. In particular, we tested if the two hypothetical mediators operate sequentially, that is with secondary trauma self-efficacy facilitating social support (i.e., cultivation hypothesis) and/or social support enhancing self-efficacy (i.e., enabling hypothesis).

### Introduction

Secondary traumatic stress (STS) results from indirect exposure to trauma (Bride, Robinson, Yegidis, & Figley, 2004) and has a set of symptoms that is similar to posttraumatic stress disorder (PTSD). This indirect exposure to trauma is typified by healthcare providers working with traumatized individuals. Although it has been associated with many negative consequences, including higher distress, increased negative cognitions (Pearlman & MacLan, 1995), and higher job burnout (Ballenger-Browning et al., 2011), recent research highlighted the importance of positive changes, such as meaning making (Park & Ai, 2008) or posttraumatic growth (Cann et al., 2010). In these two studies, the term secondary traumatic growth is used to refer to positive changes in schemas about self and the world and perceived psychological growth that trauma-focused providers experience as a result of their work. Using Social Cognitive Theory (SCT; Bandura, 1997) as our theoretical framework, we argue that social support and self-efficacy serve as key mediators in the association between STS and secondary traumatic growth. However, there are two alternative hypotheses explaining the relationship between self-efficacy and social support. The cultivation hypothesis suggests that self-efficacy facilitates social support, whereas the enabling hypothesis states that social support enhances and protects self-efficacy (Schwarzer & Knoll, 2007). Although both the cultivation and enabling hypotheses have been supported by empirical findings, no studies have examined these hypotheses in the context of indirect exposure to trauma. We tested competing hypotheses. The effect of STS on secondary traumatic growth would be: a) mediated first by secondary trauma self-efficacy and then by perceived social support (cultivation hypothesis) or b) perceived social support would lead self-efficacy (enabling hypothesis).

### Method

**Participants**  
Participants in Study 1 (N = 293 at Time 1, N = 115 at Time 2) were behavioral healthcare providers working with U.S. military personnel suffering from trauma. Study 2 was conducted among Polish healthcare workers (N = 298 at Time 1, N = 189 at Time 2) providing services for civilian survivors of traumatic events.

**Measures.**  
**Secondary Traumatic Stress.** Secondary Traumatic Stress Scale (Bride et al., 2004)  
**Secondary trauma self-efficacy.** The Secondary Trauma Self-Efficacy (STSE) Scale (Cieslak et al., 2013).  
**Perceived social support.** The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988).  
**Secondary Traumatic Growth.** Posttraumatic Growth Inventory-Short Form (PTGI-SF; Cann et al., 2010)  
**Indirect Exposure to Trauma.** Secondary Trauma Exposure Scale (Cieslak et al., in press)

**Procedures.**  
Participants from both Study 1 and Study 2 completed a set of questionnaires evaluating STS, perceived social support, secondary trauma self-efficacy, and secondary traumatic growth. Additionally, indirect exposure to trauma and demographic variables were assessed as possible factors that should be controlled when testing the hypotheses.

This research and development project was conducted by the Trauma Health & Hazards Center, University of Colorado, Colorado Springs and is made possible by a research grant that was awarded and administered by the U.S. Army Medical Research & Materiel Command (USAMRMC) and the Telemedicine & Advanced Technology Research Center (TATRC) at Fort Detrick, MD under Contract Number W81XWH-11-2-0153

### Results

In both studies, multiple mediational analyses showed evidence for the cultivation hypothesis (Figure 1). The relationship between STS at Time 1 and secondary traumatic growth at Time 2 was mediated sequentially by secondary trauma self-efficacy at Time 1 and social support at Time 2. The enabling hypothesis was not supported in either study (Figure 2).

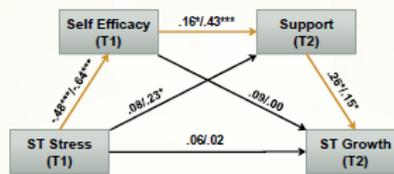


Figure 1: Multiple mediation analysis of cultivation hypothesis (Study 1 coefficient β/Study 2 coefficient β).

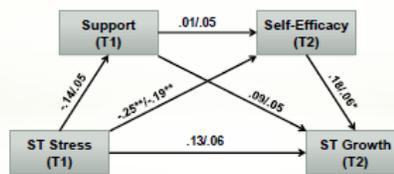


Figure 2: Multiple mediation analysis of enabling hypothesis (Study 1 coefficient β/Study 2 coefficient β).

In both Study 1 and Study 2, after controlling for the effects of three covariates (i.e., T1 indirect exposure to trauma, T1 social support, and T1 secondary traumatic growth), path analyses supported the cultivation hypothesis. High secondary traumatic stress (T1) was related to lower secondary trauma self-efficacy (T1), which in turn predicted lower social support (T2), and then lower social support (T2) was related to lower secondary traumatic growth (T2). Indirect effects were tested using the bootstrapping method with 95% confidence interval.

Table 1: Mediating Effects of Perceived Social Support and Secondary Trauma Self-Efficacy in the Relationship between Secondary Traumatic Stress and Secondary Traumatic Growth

Indirect Effects Pathways	B	SE	BC 95% CI		Effect size $d_{ab}$
			Lower	Higher	
<b>Study 1: Model 1</b>					
STS T1 → ST Self-Efficacy T1 → ST Growth T2	-.079	.095	-.289	.081	-.051
STS T1 → Support T2 → ST Growth T2	.042	.046	-.022	.171	.033
Cultivation hypothesis: STS T1 → ST Self-Efficacy T1 → Support T2 → ST Growth T2	-.041	.029	-.136	-.002	-.032
<b>Study 1: Model 2</b>					
STS T1 → ST Self-Efficacy T2 → ST Growth T2	-.100	.056	-.231	-.008	-.077
STS T1 → Support T1 → ST Growth T2	-.030	.045	-.163	.021	-.024
Enabling hypothesis: STS T1 → Support T1 → ST Self-Efficacy T2 → ST Growth T2	-.001	.006	-.022	.006	-.001
<b>Study 2: Model 1</b>					
STS T1 → ST Self-Efficacy T1 → ST Growth T2	-.001	.072	-.148	.134	-.001
STS T1 → Support T2 → ST Growth T2	.048	.029	.008	.130	.046
Cultivation hypothesis: STS T1 → ST Self-Efficacy T1 → Support T2 → ST Growth T2	-.058	.029	-.137	-.015	-.058
<b>Study 2: Model 2</b>					
STS T1 → ST Self-Efficacy T2 → ST Growth T2	-.016	.025	-.081	.023	-.016
STS T1 → Support T1 → ST Growth T2	.004	.012	-.009	.051	.004
Enabling hypothesis: STS T1 → Support T1 → SE Self-Efficacy T2 → ST Growth T2	.000	.001	-.000	.006	.000

### Discussion

This is the first longitudinal two-study investigation of how social support and self-efficacy operate as the mediators between secondary traumatic stress and secondary traumatic growth. Both studies consistently supported the cultivation hypothesis, indicating that self-efficacy beliefs mediate the relationship between STS and secondary traumatic growth through facilitation of social support.

Prior to our study, the cultivation and enabling hypotheses had not been tested in the context of secondary traumatization. These findings are only strengthened by the robust evidence supporting the cultivation hypothesis across both Study 1 and Study 2, each of which used different populations.

The findings regarding the cultivation hypothesis may have implications for SCT (Bandura, 1997) and support programming for trauma care providers. SCT proposes that self-efficacy is a key factor inter-relating with environmental factors facilitating adaptation in challenging situations. Our results suggest that enhancing self-efficacy helps a long-term adaptational process by facilitating social support. Thus, the greater the perceived efficacy for managing STS the greater the capacity to utilize a key environmental resource. Staff support programs focusing on the enhancement of secondary traumatic growth may benefit from boosting self-efficacy with the intent to facilitate perceived social support.

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# Appendix 16

## Indirect Effect of Job Burnout on Job Engagement

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### Abstract

The present study investigated the mediation effects of secondary trauma self-efficacy and perceived social support in the relationship between job burnout and job engagement among healthcare providers indirectly exposed to trauma through their work. Cultivation and enabling hypotheses are two alternative explanations that involve self-efficacy and social support as mediators. We tested these two hypotheses using a longitudinal design in two studies. Results showed that the cultivation hypothesis was supported in both Study 1 and 2, whereas the enabling hypothesis was not supported in either study. Implications of the results on future research and the importance of coping self-efficacy in supportive interventions are discussed.

### Introduction

Many healthcare providers are consistently exposed to indirect trauma through their working with clients. Evidence suggests that there is a number of negative consequences of indirect trauma exposure, including secondary traumatic stress (Bride et al., 2011), job burnout (Kadambi & Truscott, 2007) and low work engagement. However, little is known about the relationship between job burnout and job engagement among healthcare providers who are exposed to indirect trauma. Less is known concerning the psychological processes that mediate this relationship. In social cognitive theory, coping self-efficacy is a key component in the internal-evaluative process of adaptation to challenge and uncertainty. Social support is a critical environmental resource that helps individuals manage stress. The directionality of relationship between these two resources has important implications for understanding and intervening on the job burnout-work engagement relationship.

Cultivation and enabling hypotheses are two alternative explanations that involve the mediation effects of social support and self-efficacy in the relationship between stress and its consequences. The cultivation hypothesis suggests that self-efficacy facilitates social support, whereas the enabling hypothesis states that social support enhances and protects self-efficacy. This two-study longitudinal investigation examined the indirect effects of job burnout on work engagement via perceived social support and secondary trauma self-efficacy among healthcare providers.

### Method

#### Participants

The study was a part of a larger project investigating secondary trauma, work-related demands, and resources among healthcare providers.

#### Inclusion criteria

- Working at least one year as a healthcare provider (e.g., physician, nurse), clinical psychologist, counselor, or social worker.
- Being indirectly exposed to trauma through interaction with patients.
- Study 1: Providing services for a military population.

Study 1 (N at T1 = 293, N at T2 = 131): Mental healthcare providers working with the U.S. military personnel suffering from trauma.

Study 2 (N at T1 = 298, N at T2 = 189): Healthcare and social workers providing services for civilian survivors of traumatic events in Poland.

Table 1. Measures

Variable	Measurement	Cronbach's alpha			
		Study 1		Study 2	
		Time 1	Time 2	Time 1	Time 2
Job burnout	Oldenburg burnout inventory (Halbesleben et al., 2005)	.81	.85	.81	.78
Perceived Social Support	Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)	.94	.94	.96	.96
Secondary Trauma Self-Efficacy	Secondary Trauma Self-Efficacy Scale (Cieslak et al., 2013)	.87	.91	.89	.88
Work Engagement	Utrecht Work Engagement Scale-9 Item Version (Schaufeli et al., 2006)	.91	.90	.89	.89
Organizational Constraints	Organizational Constraints Scale (Spector & Jee, 1998)	.90	.90	.85	.85

#### Procedures

Participants responded to online questionnaires that assessed work engagement, job burnout, perceived social support, secondary trauma self-efficacy, and organizational constraints for Time 1 and Time 2. Mean time elapsed between Time 1 and Time 2 was 103.95 days for Study 1 and 181.91 days for Study 2.

This research and development project was conducted by the Trauma Health & Hazards Center, University of Colorado, Colorado Springs and is made possible by a research grant that was awarded and administered by the U.S. Army Medical Research & Materiel Command (USAMRMC) and the Telemedicine & Advanced Technology Research Center (TATRC) at Fort Detrick, MD under Contract Number W81XWH-11-2-0153.

### Results

- There was the serial mediation effect of secondary trauma self-efficacy at Time 1 and perceived social support at Time 2 in the relationship between job burnout at Time 1 and job engagement at Time 2 (Figure 1). This result supported the cultivation hypothesis.
- The relationship between job burnout at Time 1 and job engagement at Time 2 was mediated by the pathway through perceived social support at Time 1 and Time 2 in both Study 1 and 2.
- The pathway through secondary trauma self-efficacy at Time 1 and Time 2 mediated the effect of job burnout at Time 1 on work engagement at Time 2 in Study 2.

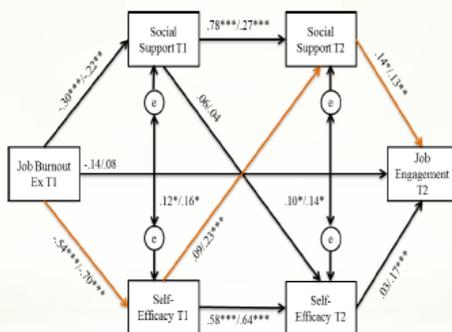


Figure 1. Cross-Lagged Analysis Testing the Cultivation and Enabling Hypotheses.

Note: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . The orange line indicates a serial mediation effect. Values before the slash indicate values for Study 1. Values after the slash indicate values for Study 2.

Table 2. Goodness-of-Fit Statistics for Comparisons of the Models

Model Description	$\chi^2$	$\chi^2/df$	RMSEA	CFI	SRMR	GFI	NFI	$\Delta\chi^2$	$\Delta NFI$
<b>Study 1</b>									
Hypothesized Model	36.17	2.26	.096	.963	.072	.947	.938	-	-
Model without SE1-SS2 Pathway	39.03	2.30	.100	.959	.077	.943	.933	2.87	.005
Model without SS1-SE2 Pathway	36.80	2.17	.096	.964	.074	.945	.937	0.64	.001
Model without Both Pathways	39.87	2.22	.097	.960	.081	.941	.931	3.71	.006
<b>Study 2</b>									
Hypothesized Model	44.80	2.80	.096	.953	.057	.954	.931	-	-
Model without SE1-SS2 Pathway	55.08	3.24	.109	.938	.070	.945	.916	10.28**	.016
Model without SS1-SE2 Pathway	45.32	2.66	.094	.954	.058	.963	.931	0.52	.001
Model without Both Pathways	55.82	3.10	.106	.939	.072	.944	.915	11.02**	.017

Note: \*\*  $p < .01$ , \*\*\*  $p < .001$ . The  $\Delta\chi^2$  indicates a change in  $\chi^2$  from the hypothesized model. A significant  $\Delta\chi^2$  value indicates that the model was significantly different from the hypothesized model. SE1: Secondary trauma self-efficacy at Time 1, SE2: Secondary trauma self-efficacy at Time 2, SS1: Perceived social support at Time 1, SS2: Perceived social support at Time 2.

#### Goodness-Of-Fit Indices Comparisons (Table 2).

- For Study 2, a change score in chi-square values indicated that the model without pathway between secondary trauma self-efficacy at Time 1 and perceived social support at Time 2 had a significantly higher chi-square score than did the hypothesized model, indicating the model without this pathway had worse model fit than did the hypothesized model.
- The model without pathway between perceived social support at Time 1 and secondary trauma self-efficacy at Time 2 was not significantly different than the hypothesized model for both Study 1 and 2.
- When both of these pathways were excluded from the model, a chi-square score for the model was significantly larger than that of the hypothesized model for Study 2, suggesting the model without these pathways had worse model fit than did the hypothesized model.

### Discussion

Results of Study 1 partially supported the cultivation hypothesis, and results of Study 2 fully supported this hypothesis. The enabling hypothesis was not supported in either Study 1 or Study 2. The support for the cultivation hypothesis suggests that enhancing self-efficacy facilitates perceived social support in a long term, and higher perceived social support is an important factor to foster job engagement.

A slightly different results for the cultivation hypothesis between Study 1 and 2 may be due to cultural differences and the contexts in which these studies were conducted (i.e., military trauma vs. civilian trauma). It may be that social support resources within a military provider context are less connected to one's perceived individual coping capabilities.

The present study showed a psychological process involving secondary trauma self-efficacy and social support as mediators in the relationship between job burnout and job engagement among healthcare providers. The present study is uniquely different from other studies supporting the enabling hypothesis (e.g., Benight et al., 1999; Cieslak et al., 2009) in that the present study investigated the population exposed to indirect trauma through their work as opposed to populations exposed to direct trauma. In addition, the present investigation is the first study to show the long-term cultivation process in the effect of job burnout on job engagement.

Healthcare workers exposed to indirect trauma may benefit from an educational support program that involves importance of enhancing self-efficacy to facilitate social resources and job engagement in a long-term. Educating healthcare workers about the psychological process of the effect of job burnout on job engagement may be beneficial to foster job engagement as well.

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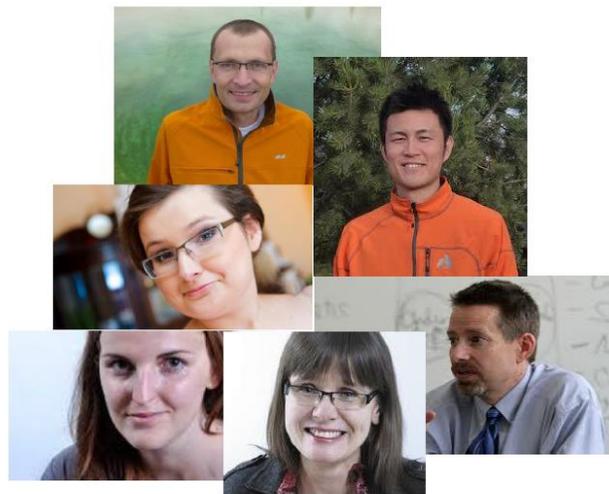
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## Appendix 17

# A meta-analysis of the relationships between self-efficacy and job burnout

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## First Things First

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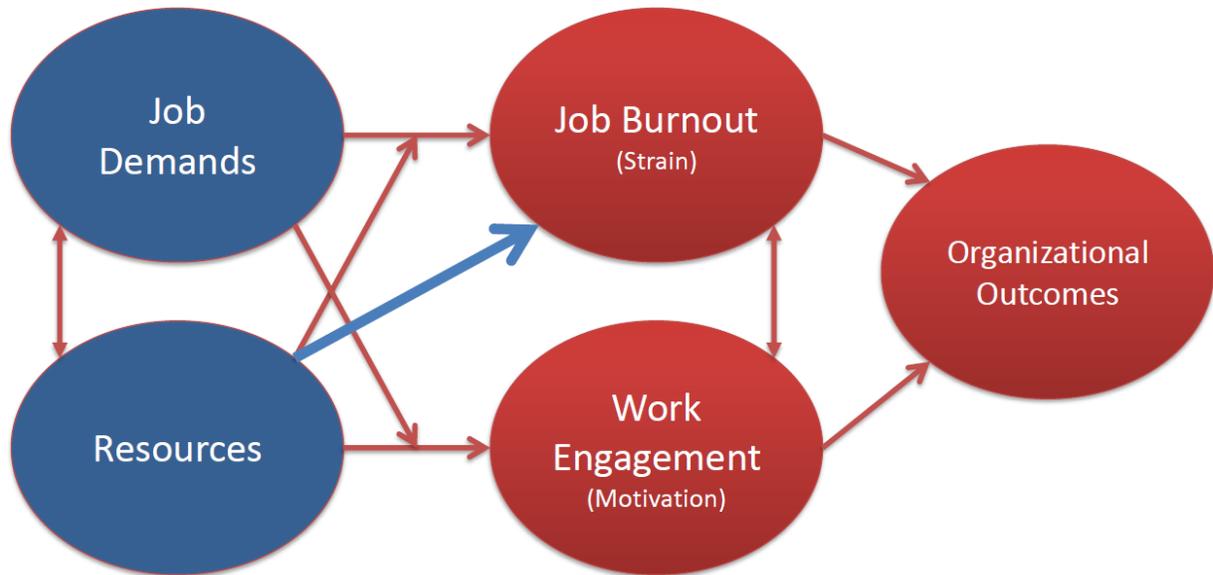
## We Know What, but WHY?

**What:** To investigate the relationship between self-efficacy and job burnout

**WHY:**

- 1) To contribute to the validity of the Job Demands-Resources (JD-R) model
- 2) To investigate possible conceptual overlap between self-efficacy and one of the job burnout components: inefficacy (i.e., reduced personal accomplishment)

## Job Demands – Resources Model (JD-R)



## Job Burnout: A Three-Factor Definition

Job burnout (JB) is “a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by three dimensions: **exhaustion, cynicism, and inefficacy**” (Maslach et al., 2001, p. 397).

- *The Maslach Burnout Inventory – General Survey* (MBI-GS; Maslach et al., 2001)
- *The MBI-Human Services Survey* – in occupations requiring contact with patients
- *The MBI-Educators Survey* – for professionals working with students or pupils

Two JB components have different names in the MBI-GS than in other MBI versions:

Cynicism = Depersonalization

Inefficacy = Reduced personal accomplishment

## Job Burnout: Other Approaches

Job burnout within compassion fatigue framework is described as a „**feeling of hopelessness and difficulties in dealing with work or in doing job effectively**” (Stamm, 2010, p. 13).

- *Professional Quality of Life* (ProQOL; Stamm, 2010)

The exhaustion-focused conceptualizations of job burnout.

Job burnout is defined “as relating to individuals’ feelings of physical, emotional, and cognitive **exhaustion**, thus focusing on continuous depletion of the individuals’ energetic coping resources resulting from their chronic exposure to occupational stress” Shirom & Melamed, 2006, p. 179).

- *The Shirom-Melamed Burnout Measure* (SMBM; Shirom & Melamed, 2006)

A two-dimensional job burnout framework focuses on **exhaustion** and **disengagement** from work, defined as “distancing oneself from one’s work and experiencing negative attitude toward the work objects, work content, or one’s work in general” (Demerouti, Bakker, Vardakou, & Kantas, 2003, p. 14).

- *The Oldenburg Burnout Inventory* (OLBI; Demerouti, Bakker, Vardakou, & Kantas, 2003)

## Self-Efficacy Definition

**Self-efficacy** (S-E) within Social Cognitive Theory is conceptualized as a personal resource that refers to “**people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives**” (Bandura, 1994, p. 72).



The context-specific self-efficacy demonstrates stronger associations with stress outcomes than self-efficacy conceptualized and measured as a general construct (Bandura, 1997).

## Contradictory Evidence

Opposite results from **two systematic reviews** of the relationship between self-efficacy and job burnout:

1. Alarcon et al., 2009: **The strongest associations** were observed between self-efficacy and one of the job burnout components: reduced personal accomplishment. (review focused on teachers, general and context-specific self-efficacy measures);
2. Brown, 2012: The associations between job burnout and reduced personal accomplishment appeared **less frequently** than the associations between self-efficacy and the two other job burnout components (only general self-efficacy measures).

Conclusion: Moderators must be considered in the following reviews.

## Study Aims

To **systematically review and meta-analyze the associations between self-efficacy and job burnout** (the global index and its components).

To **test the effects of moderators:**

- a) The type of a **job burnout measure** (MBI-related measures *versus* non-MBI-related measures);
- b) The type of a **self-efficacy measure** (general self-efficacy scales *versus* context-specific self-efficacy scales);
- c) **Occupation** (healthcare providers *versus* teachers *versus* other human services workers);
- d) Years of **work experience** (lower 33% *versus* middle 33% *versus* upper 33%);
- e) **Gender** (majority of male [more than 66%] *versus* equal gender proportion [33% - 66%] *versus* majority of females [more than 66%]);
- f) The **cultural context:**
  - **country** (Western [e.g., U.S. Spain, Netherlands] *versus* other countries [e.g., China, Philippines, Turkey]),
  - **language** (English *versus* non-English languages).

## Literature Search

- Independent studies available before 2013.
- Databases: Search Complete, Agricola, Business Source Complete, ERIC, Medline, PsychARTICLES, PsychINFO, Science Direct, SocINDEX, and Web of Knowledge.
- Combinations of the keywords:
  - self-efficacy (“self-efficacy”)
  - job burnout (“burnout”, “burn out”, and “burn-out”)
- Manual searches of the reference lists were conducted.
- At least two of the authors were involved at all stages of data extraction, coding, synthesis, and analysis.
- Cochrane systematic review method was applied (Higgins & Green, 2008).

**The initial search resulted in 214 studies.**

## Inclusion/Exclusion Criteria

- (a) Self-efficacy and job burnout were **measured** at some time point;
- (b) The **relationship** between self-efficacy and job burnout was assessed or authors provided appropriate statistics upon request;
- (c) Papers reported **statistics** that could be converted into Pearson's coefficient (e.g., *t*-test, *F*-test,  $\chi^2$ , Cohen's *d*);
- (d) Only studies on **workers**;
- (e) **English-language** publication restriction was applied (although the measurement itself could be in a non-English language);
  
- (f) Dissertations and book chapters were excluded;
- (g) Studies applying qualitative methods, narrative reviews were excluded;
- (h) When two or more studies used the same sample, only one study with a larger sample size was included;
- (i) When multiple studies using different samples were reported in a paper, each study was included as an independent study.

## Quality criteria

In addition, quality criteria were applied. Studies were qualitatively evaluated on:

- (a) Whether **reliability** of the measures was reported;
- (b) Whether **confounding variables** were controlled;
- (c) Whether **randomized sampling** was used to draw a sample from its population;
- (d) Whether **demographics** of a sample were reported;
- (e) Whether **a study objective** was clearly stated.

Only studies that met **at least four criteria were included**.

The selection processes resulted in **60 studies** meeting all inclusion criteria and quality criteria.

However, three of those studies were excluded from further analysis, because they were identified as **outliers** based on the criteria with z-scores greater than 10 or less than -10 (Pietratoni & Prati, 2009; Schwarzer & Hallum, 2008 [German sample only]; Schwerdtferger, Konermann, & Schönhofen, 2008)

Thus, **57 original studies were analyzed**.

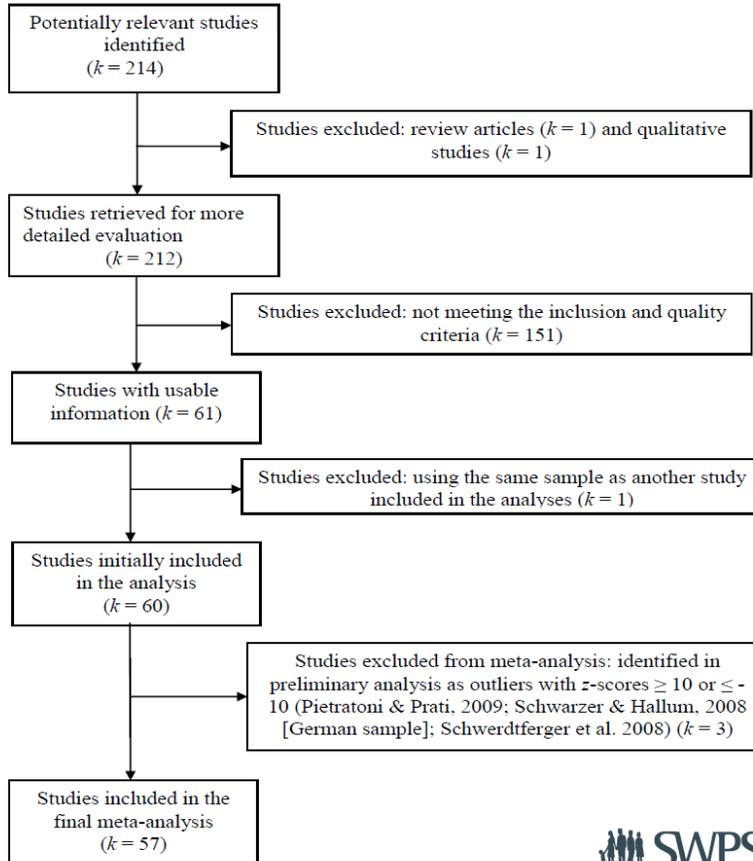


## Selection of Studies

k = 214



k = 57



## Description of Analyzed Material

$k = 57$  original studies.

$N =$  data from 22,773 workers were analyzed .

Sample sizes: varied from 39 to 2,267 participants ( $M = 399.53$ ,  $SD = 453.73$ ).

Age:  $M = 39.10$ ;  $SD = 6.38$ ; range = 25.50 – 56.00

Years of work experience:  $M = 12.16$ ;  $SD = 5.59$ ; range = 1.33 – 22.14

Occupational groups:

- Teachers (50.88%;  $k = 29$ )
- Healthcare providers (29.82%;  $k = 17$ )
- Other human services workers (19.30%,  $k = 11$ )

The most popular scales:

- Job burnout was measured with the MBI in **94.73% of studies** ( $k = 54$ )
- Self-efficacy was measured with the GSES in **29.82% of studies** ( $k = 17$ )

## Description of Analyzed Material

### Geography:

- 12 studies (21.05%) in North America (11 in US, 1 in Canada)
- 6 studies (10.52%) in Hong-Kong, 6 (10.52 %) in the Netherlands, 6 (10.52%) in Spain
- 5 studies (8.77%) in Italy
- 3 studies (5.26%) in Israel, 3 (5.26 %) in Norway, 3 (5.26%) in UK
- 2 studies (3.50%) in Belgium
- 1 study (1.75%) in France, 1 (1.75%) in Ireland, 1 (1.75%) in Philippines, 1 (1.75%) in Poland, 1 (1.75%) in Romania, 1 (1.75%) in Sweden, 1 (1.75%) in Syria, 1 (1.75%) in Taiwan, 1 (1.75%) in Turkey

Only 2 multi-country studies (3.50%) – 1 in EU, 1 in Israel, NZ and US.

### Language:

- An English-language version of the questionnaires was applied in 33.33% ( $k = 19$ ) of the studies

Only in 1 study (1.75%) both English and Chinese versions of the questionnaires were applied.

## SE-JB: Overall Effect and Measures and Occupation as Moderators

	<i>r</i>	<i>r</i> Range	<i>r</i> 95% CI	<i>n</i>	<i>k</i>	<i>Q</i>	<i>I</i> <sup>2</sup> %	Fail-Safe <i>N</i>
Overall effects								
SE – JB	<b>-.327</b>	-.609 – .224	-.366 – -.288	22,773	57	568.07***	90.14	19,714
SE – Exhaustion	-.309	-.549 – .007	-.345 – -.277	16,492	42	236.83***	82.69	3,282
SE – Depersonalization/cynicism	-.322	-.561 – -.050	-.372 – -.271	16,201	39	435.651***	91.28	3,826
SE – Lack of accomplishments	<b>-.475</b>	-.752 – -.068	-.532 – -.414	12,543	34	542.94***	93.92	10,802
Moderator								
JB measure								
MBI measures	<b>-.339</b>	-.609 – .224	-.379 – -.297	18,879	50	449.40***	89.10	13,783
Other measures	-.246	-.553 – .045	-.348 – -.139	3,894	7	63.92***	90.61	323
SE measure								
General SE	-.301	-.553 – -.122	-.351 – -.249	9,416	20	121.90***	84.41	3,554
Specific SE	<b>-.341</b>	-.609 – .224	-.394 – -.286	13,357	37	415.13**	91.33	2,679
Occupation								
Teachers	<b>-.380</b>	-.598 – .224	-.432 – -.326	10,882	29	260.28***	89.24	10,718
Healthcare providers	-.264	-.498 – -.095	-.302 – -.224	8,615	17	43.60***	63.31	1,948
Other	-.273	-.609 – .045	-.375 – -.163	3,557	11	113.13***	91.16	592

## SE-JB: Other Moderators

	<i>r</i>	<i>r</i> Range	<i>r</i> 95% CI	<i>n</i>	<i>k</i>	<i>Q</i>	<i>I</i> <sup>2</sup> %	Fail-Safe <i>N</i>
Work experience								
Less than 9 years (lower 33%)	-.278	-.379 – .045	-.366 – -.185	3,219	11	70.79***	85.87	581
Between 9 and 14 years (middle 33%)	-.265	-.513 – .224	-.372 – -.151	4,336	11	137.21***	92.71	732
More than 14 years (higher 33%)	<b>-.390</b>	-.598 – -.149	-.471 – -.303	3,458	12	87.46***	87.42	1,538
Country								
Western	<b>-.333</b>	-.609 – .045	-.377 – -.289	16,589	41	370.62***	89.21	6,316
Other	-.305	-.519 – .224	-.408 – -.195	5,397	13	186.07***	93.55	1,341
Language								
English	-.306	-.609 – .450	-.372 – -.237	5,661	19	123.42***	85.41	1,916
Other	<b>-.339</b>	-.598 – .224	-.387 – -.288	16,452	36	415.67***	91.58	5,180

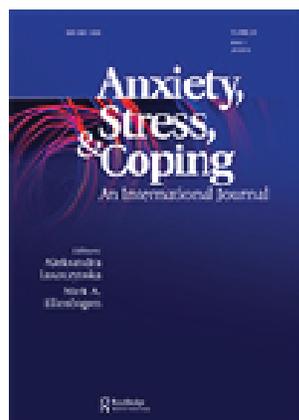
## Summary and a take-home message

- The meta-analysis of 57 studies indicated a moderate association between self-efficacy and job burnout (**weighted  $r = -.327$** ); these two concepts shared approximately **11%** of the variance.
  - JD-R context: there is a direct link between resources (self-efficacy) and JB.
  - We know nothing about the causality of the effect.
  - The relationship is moderated by several factors.
- The strongest relationship was found for reduced personal accomplishment and self-efficacy (**weighted  $r = -.475$** , and **23%** of shared variance).
  - Some conceptual overlap between JB and SE constructs exists.



## Appendix 18

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### Associations between job burnout and self-efficacy: a meta-analysis

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REVIEW

## Associations between job burnout and self-efficacy: a meta-analysis

Kotaro Shoji<sup>a</sup>, Roman Cieślak<sup>b</sup>, Ewelina Smoktunowicz<sup>b</sup>, Anna Rogala<sup>b</sup>, Charles C. Benight<sup>a</sup>  
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### ABSTRACT

**Background and Objectives:** This study aimed at systematically reviewing and meta-analyzing the strength of associations between self-efficacy and job burnout (the global index and its components). We investigated whether these associations would be moderated by: (a) the type of measurement of burnout and self-efficacy, (b) the type of occupation, (c) the number of years of work experience and age, and (d) culture. **Design and Methods:** We systematically reviewed and analyzed 57 original studies ( $N = 22,773$ ) conducted among teachers ( $k = 29$ ), health-care providers ( $k = 17$ ), and other professionals ( $k = 11$ ). **Results:** The average effect size estimate for the association between self-efficacy and burnout was of medium size ( $-0.33$ ). Regarding the three burnout components, the largest estimate of the average effect ( $-0.49$ ) was found for the lack of accomplishment. The estimates of the average effect were similar, regardless of the type of measures of burnout and self-efficacy measurement (general vs. context-specific). Significantly larger estimates of the average effects were found among teachers (compared to health-care providers), older workers, and those with longer work experience. **Conclusions:** Significant self-efficacy–burnout relationships were observed across countries, although the strength of associations varied across burnout components, participants' profession, and their age.

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Burnout develops as a result of chronic stress in the work environment, when job requirements and workers' perceived abilities do not match (Brown, 2012; Maslach, Schaufeli, & Leiter, 2001). Burnout is found to be common in a number of human services occupations and it is often used as the indicator of poor well-being or a close correlate of employees' mental and physical health (Maslach et al., 2001). Recent meta-analyses showed that burnout was associated with work-related factors such as work hours or work setting (Lim, Kim, Kim, Yang, & Lee, 2010), and social support from co-workers (Kay-Eccles, 2012). Beyond the environmental contributors to burnout, individual and self-regulatory factors that serve as relevant resources in facilitating coping are also important to consider. These self-regulatory variables include locus of control, optimism, and self-efficacy (cf. Alarcon, Eschelman, & Bowling, 2009). Whereas burnout represents a crucial and one of the most frequently studied outcomes of job stress (Maslach et al., 2001), self-efficacy beliefs represent key modifiable cognitions that may protect workers from negative outcomes of job stress (Brown, 2012). This study provides a synthesis of evidence for the relationships between burnout and self-efficacy perceptions.

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### Conceptualization and components of burnout

Burnout is most typically conceptualized as a three-component construct including exhaustion, depersonalization, and decreased personal accomplishment (Maslach et al., 2001). Since the three-component concept of burnout emerged, there has been an ongoing discussion on its content and validity (Demerouti, Bakker, Vardakou, & Kantas, 2003; Maslach et al., 2001; Schaufeli, Leiter, & Maslach, 2009). Although the labels of those three components have changed, their meaning remained the same: (1) exhaustion, representing a sense of weariness caused by a job; (2) depersonalization (or cynicism), referring to a detached attitude toward the job or clients; and (3) reduced personal or professional accomplishments, expressed in negative emotions and cognitions about own achievements and capacities to succeed at work or in life in general (Schaufeli et al., 2009). These three components are measured by the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996).

In contrast to the three-component approach by Maslach et al. (2001), others have argued that job burnout might best be reduced to a single common experience, namely exhaustion (cf. Malach-Pines, 2005). In contrast, the compassion fatigue framework defines burnout as a unidimensional construct encompassing a lack of well-being, negative attitudes toward work, or a lack of self-acceptance (Stamm, 2010).

The approach proposed by Maslach et al. (2001) assumes that all three burnout components are of equal importance. Furthermore, this approach assumes no major differences in origins of the three components, or the specificity of the interactions between the three components and other variables. However, recent systematic reviews and meta-analyses propose that some of the burnout components may form different associations with contributing factors of burnout. Significant associations were found more often when the exhaustion–self-efficacy relationship was analyzed than for personal accomplishments and self-efficacy (Brown, 2012). A review of studies conducted among professional athletes suggested that the associations between self-determination theory variables (autonomy, competence, and relatedness) and the three components of burnout were substantially different, with exhaustion forming weaker associations (–.22 to –.26) compared to the associations found for personal accomplishments (–.38 to –.64) (Li, Wang, Pyun, & Kee, 2013). In contrast, meta-analyses conducted among employees of different occupations did not show differences in the relationships between the three burnout components and personality characteristics (including core self-evaluations, the five-factor model characteristics, and affectivity variables; Alarcon et al., 2009). In sum, the differences in associations between job burnout and self-regulatory variables require further examination. The differences may result from conceptualization and operationalization of burnout, but also from the characteristics of the studied populations (e.g. the type of occupation).

### Self-efficacy and its associations with burnout

Besides demonstrating a wide range of negative consequences of work-related stress, researchers and professionals have begun to advocate for analyzing the role of protective factors (Kay-Eccles, 2012; Voss Horrell, Holohan, Didion, & Vance, 2011). These protective factors may refer to the characteristics of the work environment (e.g. organizational structure, safety standards) or individual variables (e.g. self-efficacy, age, optimism) which have established associations with burnout (Alarcon et al., 2009; Lee, Seo, Hladkyj, Lowell, & Schwartzmann, 2013). Environmental characteristics or individual difference variables (such as organizational structures or age) are difficult to change (cf. Voss Horrell et al., 2011). In contrast, cognitions such as self-efficacy are modifiable protective factors.

According to social cognitive theory self-efficacy refers to individuals' beliefs in their capability to exercise control over challenging demands (Bandura, 1997). In the context of occupational stress, self-efficacy represents the confidence that one can employ the skills necessary to deal with job-specific tasks and cope with job-specific challenges, job-related stress, and its consequences.

Self-efficacy is usually defined and measured as a domain-specific construct but it may be conceptualized and measured in a more general (or global) way, as the belief in one's competence to cope with a broader range of stressful or challenging demands (Luszczynska, Scholz, & Schwarzer, 2005). A general approach to self-efficacy provides an opportunity to assess self-efficacy in a parsimonious way, when researchers investigate general stress adaptation (Luszczynska et al., 2005).

Social cognitive theory assumes that self-efficacy determines various stress-related outcomes (Bandura, 1997) and burnout is an example of such an outcome. Employees with low self-efficacy are likely to harbor pessimistic thoughts about their future accomplishments and personal development (Luszczynska & Schwarzer, 2005). Those assumptions form the theoretical background for the association between self-efficacy and burnout. Self-efficacy and stress outcome indicators, such as personal accomplishment, are conceptually distinct (cf. Luszczynska & Schwarzer, 2005). The construct of personal accomplishment (and its measure) is of retrospective character and it represents the outcomes of actions (e.g. "accomplished many worthwhile things" or "feel exhilarated after work"), whereas self-efficacy beliefs are of prospective and operative character (i.e. refer to potential abilities of an individual and their future actions).

Research conducted in the context of stress shows that self-efficacy may operate as a resource preventing negative consequences of strain (cf. Blecharz et al., 2014). Self-efficacy prompts recovery from job stress (Hahn, Binnewies, Sonnentag, & Mojza, 2011), and efficacy beliefs were found to facilitate employees' adaptation to changes in the organization (Jimmeson, Terry, & Callan, 2004). Experimental studies demonstrated that a self-efficacy-enhancing intervention reduced employees' strain (Unsworth & Mason, 2012).

Two systematic reviews, which employed meta-analysis to analyze the relationship between self-efficacy and burnout components, yielded different results. Alarcon et al. (2009) identified 12 studies and found that the strongest associations were observed for self-efficacy and personal accomplishments among workers of various professions. In contrast, Brown (2012) showed that among teachers the associations between burnout and personal accomplishments emerged less frequently than the associations between self-efficacy and the two other burnout components. The two reviews did not test for the potential moderators (such as the occupation type) of these associations or for the differences in the associations between self-efficacy and burnout components. The differences between these two meta-analyses, in terms of analyzed population, operationalization, and the measurement of self-efficacy and burnout, could affect the obtained results. Brown (2012) focused on teachers and accounted for both general and specific self-efficacy, whereas Alarcon et al. (2009) did not account for the type of profession and included only studies that tested the role of general self-efficacy. Furthermore, the limitation of the two reviews refers to the conceptualization of burnout: both studies excluded data obtained with measures other than MBI; therefore it is hard to evaluate if the operationalization of burnout may affect its relationship with personal resource variables. The purpose of this review is to evaluate this literature by taking into account these previous limitations.

### The moderators of burnout–self-efficacy associations

Social cognitive theory assumes that self-efficacy tied to specific aspects of stressful encounters, barriers, and outcomes will demonstrate stronger associations with stress outcomes than self-efficacy that is conceptualized and measured in a general way (Bandura, 1997). Therefore, the overarching synthesis of relationships between self-efficacy and burnout should account for the operationalization of both burnout and self-efficacy. Meta-analyses accounting for burnout showed that there are significant differences in the relationships between burnout and stress-related variables: these differences depend on the operationalization/assessment of burnout (Cieslak et al., 2014).

Social cognitive theory assumes that the associations between self-efficacy and stress outcomes (e.g. burnout) should be similar across populations, regardless of age, gender, or culture (Bandura, 1997), but depend on individual past experiences. For example, the relationship between self-efficacy and stress outcomes would be moderated by whether an individual has had many opportunities to

exercise mastery over stressful workplace challenges. It is possible that age and years of work experience represent proxy indicators of such opportunities to exercise mastery. Therefore, characteristics of employees, such as their age or the number of years of work experience, are potential moderators.

Several systematic reviews and meta-analytical studies investigating determinants of burnout highlighted the role of other individual characteristics or contextual factors, such as type of occupation or culture/countries of data collection. For example, the type of profession and country/culture significantly moderated the associations between burnout and work-related or individual risk factors (Lee et al., 2013) and the associations between burnout and other mental health outcomes (for systematic review, see Cieslak et al., 2014). Meta-analyses conducted for data obtained among teachers yielded stronger burnout–personal accomplishment associations (Brown, 2012) than analyses conducted among workers with other occupations (Alarcon et al., 2009). Therefore, the effect of the type of occupation on the burnout–self-efficacy association needs to be clarified.

The concepts of burnout and self-efficacy were developed in the USA, and a large proportion of studies investigating the associations between these constructs were conducted in North America. However, it is often indicated that research should provide more in-depth analysis on cross-national differences of the effects of job stress (such as burnout) and its determinants: the assumption that Western concepts and theories transcend cultural and national boundaries may be not valid (cf. Perrewé et al., 2002). Furthermore, critical determinants of negative outcomes of job stress (such as burnout) include existing work-related policies, social resources at work, and organizational characteristics (Voss Horell et al., 2011). These critical determinants are likely to vary across countries and occupations.

In sum, the operationalizations of the self-efficacy and burnout constructs as well as individual variables (the number of years of work experience, age, culture/the country of origin, and occupation) may affect self-efficacy–burnout associations. The present study extends the existing literature by evaluating the burnout–self-efficacy relationship in the context of socio-demographic and operationalization-related moderators.

### **Aims of the study**

Although evidence for the relationships between job burnout and workers' self-efficacy is accumulating, there is no overarching synthesis of these relationships, accounting for different professions and different operationalizations of the two related constructs. Whereas burnout is one of the key outcomes in occupational stress research, self-efficacy represents a crucial personal resource. Therefore, this study aimed at systematically reviewing and meta-analyzing the strength of associations between self-efficacy and job burnout (the global index and its components). We investigated if these associations would be moderated by: (a) the type of measurement of job burnout and self-efficacy, (b) the type of occupation, (c) the number of years of work experience and age, and (d) employees' culture or country.

### **Method**

#### **Literature search**

We conducted a database search of independent studies examining self-efficacy and job burnout that were available before 2013 using Search Complete, Agricola, Business Source Complete, ERIC, Medline, PsychARTICLES, PsychINFO, Science Direct, SocINDEX, and Web of Knowledge. Combinations of the keywords that were used in this search were terms related to self-efficacy ("self-efficac\*") and job burnout ("burnout", "burn out", and "burn-out"). Authors of original studies were asked to provide statistical information when the articles did not provide necessary information (e.g. Pearson's coefficient, Cronbach's  $\alpha$ ) to be included in this study. In addition, manual reviews of

article references were conducted. We used the Cochrane systematic review methods (Higgins & Green, 2008).

### *Inclusion criteria, exclusion criteria, and data extraction*

The inclusion criteria were: (a) self-efficacy and job burnout were measured; (b) the relationship between self-efficacy and burnout was assessed, or authors provided appropriate statistics upon request; (c) articles reported statistics that could be converted into Pearson's coefficient (e.g. *t*-test, *F*-test,  $\chi^2$ , Cohen's *d*); and (d) participants of original studies were employees (research conducted among students were not included). We included only studies reported in English, although the measurement used in studies could be in non-English languages. Studies applying qualitative methods, reviews, research on non-workers (e.g. student samples), dissertations, and book chapters were excluded.

When two or more studies used the same sample, only one study with the larger sample size was included (Schwarzer & Hallum, 2008). Therefore, to avoid dependence of effect sizes, one study was excluded because it shared the same sample as another study. When multiple studies using different samples were reported in a paper, each study was included as an independent study.

If the individual studies are of low quality and the synthesis is conducted without any consideration of quality then the results of the review and meta-analysis may be biased (Glasziou, Irwig, Bain, & Colditz, 2001). The low scoring obtained in quality tools is often used as the exclusion criterion in systematic reviews (Glasziou et al., 2001). Therefore, we applied the quality criteria based on a quality measure proposed by Kmet, Lee, and Cook (2004). Five quality criteria were used (Kmet et al., 2004): (a) measurement reliability (whether internal reliability of measurements was reported or the applied measures of burnout and self-efficacy had good reliability established in earlier research on psychometric properties of respective scales); (b) potential confounders were considered and addressed in the study; (c) a clear description of participants' selection procedures was provided; (d) basic demographics of a sample (age and gender) were reported; and (e) the objectives of a study were sufficiently described. Only studies representing at least moderate quality (i.e. meeting at least 60% of the criteria; Kmet et al., 2004) were included. As a result, four studies were excluded.

Figure 1 displays the selection process. The initial search resulted in 214 studies. A total of 60 studies meeting all inclusion and quality criteria were identified. In the next step, we excluded studies yielding extreme effect sizes, which are likely to produce a radical increase in a standard deviation that results in an inaccurate estimate of a cumulative effect size (Hunter & Schmidt, 2004). Removing extreme effect sizes can increase the accuracy of the estimate. To tackle this issue we used a procedure based on *z*-scores. Three studies were excluded because they were identified as outliers based on the criteria with *z*-scores greater than 10 or less than -10 (Pietrantonio & Prati, 2008; Schwarzer & Hallum, 2008 (German sample only); Schwerdtfeger, Konermann, & Schönhofer, 2008), which indicated that the effect sizes reported in these studies were  $\pm 10$  standard deviations from the estimate of the average effect. As a result, we included 57 original studies in further analyses (see Table 1).

Two researchers (ES and AR) extracted descriptive data for each study including the sample size, socio-demographic characteristics, and the study design. Next, they retrieved data constituting moderators: the type of self-efficacy and burnout measures, countries where studies were conducted, languages used where the studies were conducted, occupation of the sample, mean age of the sample, and the number of years of work experience. Statistical information, including Cronbach's  $\alpha$  and measures of association, was also extracted.

### *Coding*

Data constituting moderators were coded independently by three researchers (ES, AR, and RC or KS). Overall, the concordance of the coding for moderator variables was high. All values of the kappa

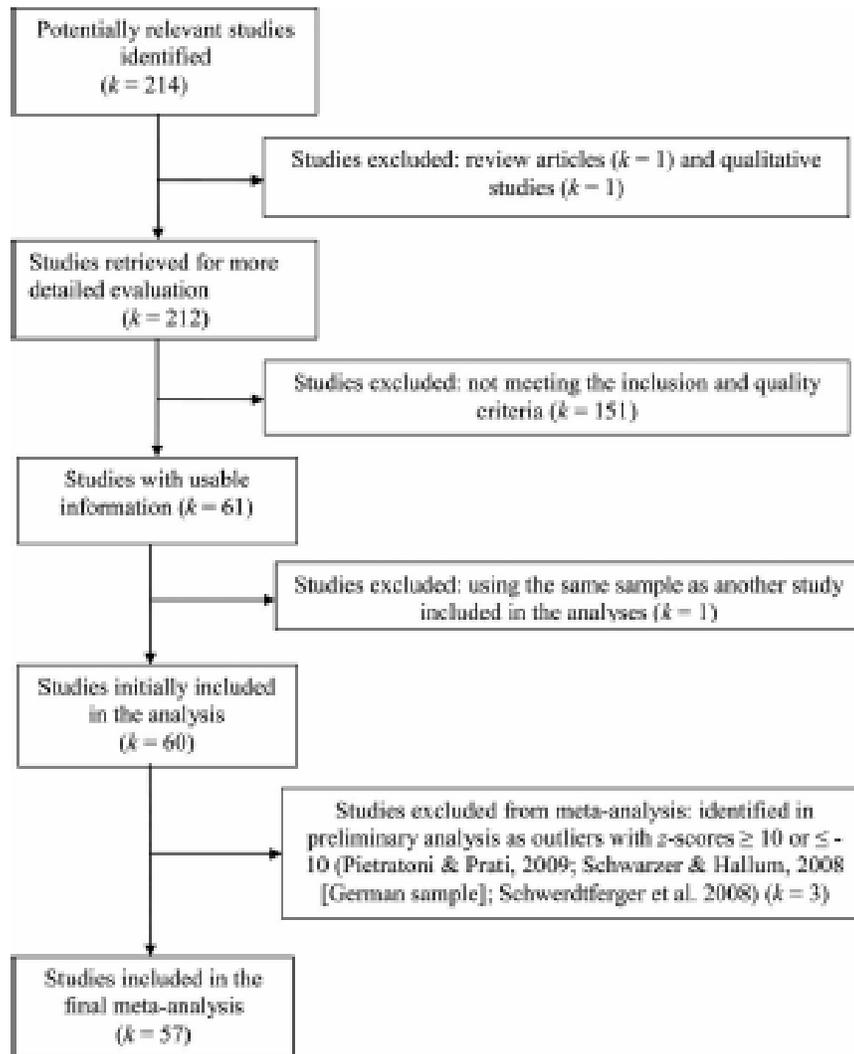


Figure 1. Selection of studies for the meta-analysis.

coefficient were above .89 ( $p < .01$ ). Disagreements related to data selection and abstraction were resolved by a consensus method (searching for possible rating errors, followed by a discussion, and arbitration by a third researcher; Higgins & Green, 2008).

The studies were divided based on measurements used for job burnout: (a) MBI-related measurements such as MBI-General Survey (Schutte, Toppinen, Kalimo & Schaufeli, 2000), MBI-Educators Survey (Maslach et al., 1996), and MBI-Human Service Survey (Maslach & Jackson, 1981) or (b) non-MBI-related measurements such as the Utrechtse Burnout Schaal (Schaufeli & van Dierendonck, 2000), the Professional Quality of Life Scale (Stamm, 2005), Burnout Scale (Blase, 1982), and the Bergen Burnout Indicator (Matthiesen & Dyregrov, 1992).

Original studies were divided based on measurements for self-efficacy: (a) general self-efficacy measurements (Chen, Gully, & Eden, 2001; Chesney, Chambers, Taylor, Johnson, & Folkman, 2003; Jerusalem & Schwarzer, 1992; Schwarzer, 1993; Sherer et al., 1982; Zinz, 1998) or (b) context-specific self-efficacy measurements (e.g. Self-Efficacy Scale for Classroom Management and Discipline, Emmer &

Table 1. Summary of the studies included in the meta-analysis.

Study	N (% females)	Mean age (SD)	Mean experience (SD)	Occupation (occupation group)	Country (language)	Study design	JB measure (a)	SE measure (a)	r
Baker, O'Brien, and Salehuddin (2007)	123 (100)	36.97 (9.48)	5.92 (4.70)	Shelter workers (OG 2)	USA (English)	CS	MBI (EE = .87, DP = .52, PA = .68)	<sup>a</sup> SES (.87), <sup>a</sup> SES (.76)	-.348
Bentall, Liney, and Fromwick (2009)	100 (19)	39.3	13.1	Health-care workers (OG 2)	USA (English)	CS	MBI (EE = .90, DP = .70, PA = .79) Scale by authors (range: .71-.78)	<sup>b</sup> Short TES (.77) <sup>b</sup> Scale by authors (.80)	-.408
Betoret (2006)	247 (47)	-	-	Teachers (OG 1)	Spain (Spanish)	CS	MBI (EE = .86, DP = .76, PA = .83)	<sup>b</sup> PTS (.84), <sup>b</sup> TPSE (.87)	-.360
Betoret (2009)	725 (63)	-	-	Teachers (OG 1)	Spain (Spanish)	CS	MBI (EE = .80)	<sup>b</sup> Chowdhury (1993) (.73)	-.465
Boyd, Levin, and Sager (2009)	495 (27)	-	-	Sales workers (OG 3)	USA (English)	CS	MBI (EE = .94, DP = .81, PA = .77) <sup>f</sup>	<sup>b</sup> Parke, Maguire and Heaven (1997) (subscales: .85, .79) <sup>b</sup> TSSES (.90)	-.410
Bragard, Etienne, Merckaert, Libert, and Razavi (2010)	96 (64)	28.2 (2.6)	3 (2.05)	Medical residents (OG 2)	Belgium (French)	L	MBI (EE = .94, DP = .81, PA = .77) <sup>f</sup>	<sup>b</sup> Parke, Maguire and Heaven (1997) (subscales: .85, .79) <sup>b</sup> TSSES (.90)	-.154 <sup>e</sup>
Brienes, Taberno, and Arenas (2010)	68 (60)	43.56 (110.93)	17.15 (11.97)	Teachers (OG 1)	Spain (Spanish)	CS	MBI (EE = .85, PA = .71)	<sup>b</sup> SES for CMD (T1: .89, T2: .90)	-.364
Brouwers and Tomic (2000)	243 (74)	46.29	21.25 (8.92)	Teachers (OG 1)	The Netherlands (Dutch)	L	MBI (T1: EE = .91, DP = .72, PA = .86; T2: EE = .92, DP = .71, PA = .86)	<sup>b</sup> SES (subscales: .94, .92)	-.598
Brouwers, Evers, and Tomic (2001)	277 (25)	45.87 (8.82)	21.28 (9.74)	Teachers (OG 1)	The Netherlands (Dutch)	CS	MBI (EE = .90, DP = .71, PA = .85)	<sup>b</sup> TSSES (subscales: .94, .92)	-.396
Brouwers, Tomic, and Bolujt (2011)	311 (30)	41.19 (11.05)	18.85 (11.29)	Teachers (OG 1)	The Netherlands (Dutch)	CS	MBI (EE = .91, DP = .74, PA = .83)	<sup>b</sup> Scale by authors (.79)	-.352
Budnik (2009)	402 (77)	38.4	13.6	Teachers (OG 1)	Poland (Polish)	CS	MBI (EE = .87, DP = .77, PA = .75) <sup>d</sup> BBI (.90)	<sup>a</sup> SES (.86) <sup>d</sup>	-.347
Burke, Mathiesen, and Pallesen (2006)	496 (92)	-	-	Nursing home workers (OG 2)	Norway (Norwegian)	CS	BBI (.90)	<sup>a</sup> SES (.85)	-.171
Chan (2007)	267 (63)	27.5	4.67 (3.84)	Teachers (OG 1)	HK (English)	CS	MBI (EE = .87, DP = .67, PA = .79)	<sup>b</sup> SETH (.75)	-.322
Chan (2008)	159 (62)	27.06	6.98 (7.02)	Teachers (OG 1)	HK (English)	CS	MBI (EE = .88, DP = .65, PA = .78)	<sup>b</sup> TSSES-24 (subscales range: .79-.92), <sup>a</sup> SES (.83)	-.379
Cocognani, Pietrantonio, Palestini, and Prati (2009)	764 (28)	34	9.38 (7.36)	Emergency room workers (OG 2)	Italy (Italian)	CS	ProQOL R-IV (.86)	<sup>b</sup> PPE (.77)	-.205

(continued)



Table 1. Continued.

Study	N (% females)	Mean age (SD)	Mean work experience (SD)	Occupation (occupation group)	Country (language)	Study design	JB measure (α)	SE measure (α)	r
Davidson et al. (2010)	258 (33)	56	17	University workers (OG 3)	Israel, NZ, USA	Quasi	MBI (EE = .86)	<sup>a</sup> Scale by authors (.87)	-.243
Devos, Bouckenooghe, Engels, Horton, and Aelterman (2007)	46 (39)	-	-	Primary school principals (OG 1)	Belgium (Dutch)	EX	MBI (.94)	<sup>a</sup> GSE (.85)	-.553
Duffy, Oyeboode, and Allen (2009)	61 (74)	42.6 (14)	11.8 (9.1)	Care home workers for elderly with dementia (OG 2)	UK (English)	CS	MBI (EE = .90, DP = .79, PA = .71)	<sup>b</sup> GENSE (.96)	-.498
Egyed and Short (2006)	106 (89)	43 (10.83)	13.77 (9.45)	Teachers (OG 1)	USA (English)	CS	MBI (ranges: .72-.89)	<sup>b</sup> TES (subscales: .78, .75)	-.061
Essele and D'Amato (2011)	599 (85)	46.6 (10.5)	-	Health-care workers (OG 2)	Sweden (Swedish)	CS	MBI (EE = .79, DP = .60, PA = .71)	<sup>a</sup> GSE (.86)	-.332
Ernold, Schneider, Meier, and Yagil (2011)	39 (92)	40.9	15.8 (10.75)	Oncology nurses (OG 2)	Israel (Hebrew)	CS	MBI (EE = .86, DP = .80, SA = .56)	<sup>b</sup> Scale by authors (.87)	-.357 <sup>c</sup>
Evers, Brouwers, and Tomic (2002)	490 (23)	47.23	22.14 (8.86)	Teachers at the study-home system (OG 1)	The Netherlands (Dutch)	CS	MBI (EE = .90, DP = .68, PA = .83)	<sup>b</sup> Scale by authors (subscales: .68, .85, .80)	-.515
Evers, Tomic, and Brouwers (2005)	271 (35)	45.57 (8.39)	18.99 (9.25)	Teachers (OG 1)	The Netherlands (Dutch)	CS	MBI (EE = .87, DP = .70, PA = .80)	<sup>a</sup> GSES (.79)	-.433
Friedman (2003)	322 (94)	37.62 (0.50)	12.9 (0.51)	Teachers (OG 1)	Israel (Hebrew)	CS	MBI (EE = .90, DP = .79, PA = .82)	<sup>b</sup> Scale by authors (subscales: .62, .74, .79, .82)	-.277
Gibson, Grey, and Hastings (2009)	81 (94)	25.5	1.33 (1.2)	Therapists (OG 2)	Ireland (English)	CS	MBI (EE = .85, DP = .65, PA = .80)	<sup>b</sup> PTSE (.89)	-.346
Grau, Salanova, and Peiro (2007)	140 (46)	33 (8.05)	-	New technology workers (OG 3)	Spain (Spanish)	CS	MBI (EE = .82, DP = .86)	<sup>a</sup> GSES (.81), <sup>a</sup> MBI PE scale (.70)	-.122
Greenlass and Burke (2000)	1363 (95)	42	13.31 (7.88)	Nurses (OG 2)	Canada (English)	CS	GBQ (EE = .90, DP = .82, PE = .73)	<sup>a</sup> GSES (.87)	-.238
Howard, Rose, and Levenson (2009)	82 (57)	40 (11.45)	-	Various workers dealing with people with intellectual disabilities (OG 2)	UK (English)	CS	MBI (EE = .82, DP = .60, PA = .80)	<sup>b</sup> DBSES (.94)	-.264
Langa, Rasile, and Bruchon-Schwartz (2008)	410 (74)	42.01 (8.5)	18.53 (10.63)	Teachers (OG 1)	France (French)	L	MBI (EE = .85, DP = .67, PA = .78)	<sup>a</sup> GSES (.75)	-.344
Lee and Akhtar (2007)	2267 (89)	-	-	Nurses (OG 2)	HK (Chinese)	CS	MBI (EE = .90, DP = .82, PA = .78)	<sup>a</sup> GSES (.87)	-.205
Lu (2007)	135 (78)	32.28	-	Nurses (OG 2)	Philippines (English)	CS	MBI (.76)	<sup>a</sup> GSES (.93)	-.228

Nota, Ferrari, and Sorei (2007)	146 (58)	34.75 (7.31)	11.9 (9.1)	Social and healthcare professionals (OG 2)	Italy (Italian)	CS	MBI (EE = .90, DP = .79, PA = .71)	<sup>b</sup> Scale by authors (subscales range: .84–.90)	-.184
Ozdemir (2007)	523 (66)	38.15 (6.95)	13.77 (7.60)	Teachers (OG 1)	Turkey (Turkish)	CS	MBI (EE = .83, DP = .71, PA = .72)	<sup>b</sup> SES for CMD (.90)	-.513
Paş, Bradshaw, Herhfeldt, and Leaf (2010)	641 (96)	–	8.45 (8.62)	Teachers (OG 1)	USA (English)	L	MBI (EE = .90)	<sup>b</sup> TES (.84)	-.207
Petita and Vecchione (2011)	142 (26)	–	–	Workers at a nuclear physics institute (OG 3)	Italy (Italian)	CS	MBI (EE = .87, DP = .82, PE = .76)	<sup>b</sup> Scale by authors (.81)	-.553
Pisanti, Lombardo, Lucidi, Lazzari, and Benti (2008)	1383 (77)	39.1	–	Nurses (OG 2)	Italy (Italian)	CS	MBI (EE = .88, DP = .72, PA = .82)	<sup>b</sup> OXSEN (subscales .77, .79)	-.292
Prati, Pietrantonio, and Cicognani (2010)	451 (31)	33.66 (11.005)	9.04 (7.27)	Rescue units' workers (OG 2)	Italy (Italian)	CS	ProQOL R-IV (.79)	<sup>b</sup> PPPE (.79)	-.367
Pugh, Groth and Henning-Thurau (2011)	528 (45)	36.5 (11.055)	5.6 (6.4)	Customer service workers (OG 3)	UK (English)	CS	Scale by authors (.88)	<sup>b</sup> Scale by authors (.90)	.045
Ransford, Greenberg, Domitovich, Small, and Jacobson (2009)	133 (92)	40.73 (12.04)	15 (11.43)	Teachers (OG 1)	USA (English)	CS	MBI (.86)	<sup>b</sup> TES (.64)	-.458
Salanova, Grau, Cifre, and Llorens (2000)	140 (46)	–	–	Computer technology specialists (OG 3)	Spain (Spanish)	CS	MBI (EE = .89, DP = .87)	<sup>b</sup> Scale by authors (.79)	-.180
Salanova, Peiró, and Schaufeli (2002)	405 (51)	32 (8.07)	–	Computer technology specialists (OG 3)	Spain (Spanish)	CS	MBI (EE = .85, DP = .82)	<sup>a</sup> GSES (.85), <sup>b</sup> CSE (.71)	-.273
Schwarzer, Schmitz, and Tang (2000)	261 (71)	–	–	Teachers (OG 1)	HK (Chinese, English)	CS	MBI (EE = .88, DP = .79, PA = .83)	<sup>a</sup> GSES (.84)	-.370
Schwarzer and Hallum (2008)	608 (85)	–	–	Teachers (OG 1)	Syria (Arabic)	CS	MBI (EE = .83, DP = .71, PA = .78)	<sup>a</sup> GSES (.87), <sup>b</sup> TES (.80)	-.452
Shyman (2010)	100 (89)	–	–	Paraeducators (OG 1)	USA (English)	CS	MBI (.61)	<sup>b</sup> TES (.49)	-.494
Shaavik and Shaavik (2007)	244 (63)	45	14.3 (10.85)	Teachers (OG 1)	Norway (Norwegian)	CS	MBI (EE = .79, DP = .61, PA = .79)	<sup>b</sup> NTSES (subscales range: .74–.91), <sup>b</sup> Scale by authors (.79)	-.410
Shaavik and Shaavik (2010)	2249 (68)	45	–	Teachers (OG 1)	Norway (Norwegian)	CS	MBI (EE = .88, DP = .70)	<sup>b</sup> NTSES (subscales range: .77–.91)	-.433
Tang, Au, Schwarzer, and Schmitz (2001)	269 (68)	37.09 (9.78)	9.5 (9.76)	Teachers (OG 1)	HK (Chinese)	CS	MBI (EE = .87, DP = .80, PA = .84)	<sup>a</sup> GSES (.81)	-.348
*Tang et al. (2001)	61 (62)	30.36 (5.76)	6.41 (4.28)	Teachers (OG 1)	HK (Chinese)	L	MBI (TI: EE = .89, DP = .77; TE: EE = .90, DP = .83)	<sup>a</sup> GSES (.84)	-.359
Tatar (2009)	281 (78)	–	13.84 (9.25)	Teachers (OG 1)	Israel (Hebrew)	CS	MBI (.80)	<sup>b</sup> TES (subscales .81, .71)	.224 <sup>c</sup>

(Continued)

Table 1. Continued.

Study	N (% females)	Mean age (SD)	Mean work experience		Occupation (occupation group)	Country (language)	Study design	JB measure ( $\alpha$ )	SE measure ( $\alpha$ )	<i>r</i>
			(SD)	(SD)						
Tsoulopas, Carson, Matthews, Grawitch, and Barber (2010)	610 (86)				Teachers (OG 1)	USA (English)	CS	MBI (EE = .89)	<sup>b</sup> PECOM (.94)	-.251
Wadit and Kallay (2011)	177 (87)	39.8 (9.5)	-	-	Teachers (OG 1)	Romania (Romanian)	CS	MBI (.65)	<sup>b</sup> TSES (.93)	-.532 <sup>c</sup>
Volker et al. (2010)	383 (63)	37.82	2.45 (1.25)	-	Addiction therapists (OG 2)	EU	L	MBI (EE = .85, DP = .71, PA = .74)	<sup>a</sup> GSES (.82)	-.354
Wengardt, Guccione, Bellotti, and Lai (2009)	147 (62)	47 (9.6)	-	-	Counsellors (OG 2)	USA (English)	EX	MBI (.75) <sup>f</sup>	<sup>b</sup> PEQ (.93) <sup>c</sup>	-.095 <sup>c</sup>
Wilk and Moyrhan (2005)	429 (80)	38 (11)	8.4 (9)	-	Call center supervisors (OG 3)	USA (English)	CS	MBI (EE = .78)	<sup>b</sup> JSE (.89)	-.288
Xanthopoulos, Bakker, Demerouti, and Schaufeli (2007)	714 (17)	42 (9.4)	14 (10.2)	-	Electrical engineers (OG 3)	The Netherlands	CS	MBI (EE = .88)	<sup>a</sup> GSES (.86)	-.149
Yu, Lin, and Hsu (2009)	205 (28)	-	-	-	Hightech IT workers (OG 3)	Taiwan (Chinese)	CS	MBI (EE = .86, DP = .89, PE = .66)	<sup>a</sup> Boscher and Smith (1998) (.74)	-.243
Zunz (1998)	101 (69)	42.7	-	-	Human service managers (OG 3)	USA (English)	CS	MBI (EE = .89, DP = .73, PA = .80)	<sup>b</sup> Scale by authors (.85)	-.609

Note: Study = first author and year of publication; N (% females) = sample size and percentage of females; CS = cross-sectional study; EX = experimental study; JB = job burnout; SE = self-efficacy; T1 = Time 1; T2 = Time 2; TES = Teacher Efficacy Scale; TPTS = teacher-perceived teaching self-efficacy; GSES = General Self-efficacy Scale; SES = Self-efficacy Scale; TPSE = teacher-perceived self-efficacy in classroom management; TSES = Teacher Interpersonal Self-efficacy Scale; SES for CMD = Self-efficacy Scale for Classroom Management and Discipline; SEHI = Self-efficacy Toward Helping Scale; TSES-24 = Teacher Self-efficacy Scale; PPE = perceived personal efficacy for members of volunteering associations; KANSE = inventory of geriatric nursing self-efficacy; PTSE = Perceived Therapeutic Self-efficacy Scale; DBSES = Difficult Behaviour Self-efficacy Scale; OCSE-N = Occupational Coping Self-efficacy Questionnaire for Nurses; CSE = computer self-efficacy; NTSSES = Norwegian Teacher Self-efficacy Scale; PPECOM = Perceived Personal Efficacy in Classroom Management Questionnaire; TSES = Teachers' Sense of Efficacy Scale; PEQ = Provider Efficacy Questionnaire; JSE = job self-efficacy; MBI = Maslach Burnout Inventory with subscales; BBI = Bergen Burnout Indicator; EE = emotional exhaustion; DP = depersonalization; PA = personal accomplishment; CV = cynicism; PE = professional efficacy; SA = self-actualization; ProQOL R-IV = Professional Quality of Life Scale Revision W-Burnout Scale; GBQ = General Burnout Inventory; OG 1 = occupation group (teachers); OG 2 = occupation group (health-care workers); OG 3 = occupation group (others).

<sup>a</sup>General self-efficacy measure.

<sup>b</sup>Specific self-efficacy measure.

<sup>c</sup>Information not reported in the article, but provided on the authors' request.

<sup>d</sup>Information retrieved from psychometric studies.

Hickman, 1991; Inventory of Geriatric Nursing Self-Efficacy, Mackenzie & Peragine, 2003; Self-Efficacy Toward Helping Scale, Schwarzer, 1993; Teacher Self-Efficacy Scale, Skaalvik & Skaalvik, 2007; Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998). The general self-efficacy measures assessed beliefs about abilities to deal with various challenging demands across a variety of stressful situations. The context-specific measurement accounted for workers' confidence that one can employ the skills necessary to deal with job-specific tasks, cope with job-specific challenges, or deal with stress and its consequences.

Lastly, moderation factors were created based on regions where the study had been conducted (western countries [e.g. the USA, Spain, the Netherlands] vs. other countries [e.g. China, Philippines, Turkey]), languages spoken where studies were conducted (English vs. other languages [14 other languages]), and occupations of the sample (health-care providers vs. teachers vs. other services).

### Data analysis

The estimates of the average effect, heterogeneity, and effect of the moderators on the relationship between self-efficacy and job burnout were examined using Comprehensive Meta-Analysis software (version 2.2.06.4; Borenstein, Hedges, Higgins, & Rothstein, 2005). The statistical analysis followed the procedure described by Hunter and Schmidt (2004). The estimates were computed using the random-effect model method (Field & Gillett, 2010).

Pearson's correlation was used as the effect size indicator. If the original study provided only statistical analyses other than Pearson's correlation, those statistics were converted into Pearson's correlations. When the original study provided multiple Pearson's correlations between self-efficacy and job burnout (e.g. for separate subscales), a mean correlation coefficient was calculated. Partial correlation coefficients or beta coefficients were not considered. The direction of a correlation involving the MBI personal accomplishment subscale was reversed to create negative associations between self-efficacy and burnout. When a study used a measurement of general self-efficacy and a context-specific self-efficacy measure, we included a Pearson's correlation between context-specific self-efficacy and burnout in the calculation of a cumulative effect size. In line with social cognitive theory (Bandura, 1997), context-specific self-efficacy is considered a more proximal predictor of specific outcomes, such as burnout. In analyses testing the role of burnout (when no specific burnout component was investigated) the total scores of the respective burnout measure (all components) were used.

Overall, correlations were directly synthesized to form the estimate of the effect size without transforming into Fisher's  $z$ . The correction for attenuation due to the measurement error was obtained by dividing the correlation coefficient (for self-efficacy–burnout association) by the geometric mean of the reliability coefficients (Cronbach's  $\alpha$  coefficients for self-efficacy and burnout measures). Cronbach's  $\alpha$  coefficients were retrieved from the original studies. If the original study provided us for subscales only, a mean Cronbach's  $\alpha$  for a total score was calculated. When no  $\alpha$  was available, it was obtained from psychometric studies (Gibson & Dembo, 1984; Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005; Maslach & Jackson, 1981). In sum, we corrected for attenuation due to measurement errors for an effect size from each study using the method described by Hunter and Schmidt (2004) but we did not calculate the  $p$  coefficient which requires the correction of artifacts (such as restriction of range) on a weighted mean  $r$  (Hunter & Schmidt, 2004).

Heterogeneity of the data included in the meta-analysis was tested using a  $Q$ -statistic. The  $Q$ -statistic evaluates how effect sizes scatter on a  $\chi^2$  distribution (Cochran, 1954). Between-studies data heterogeneity was also evaluated with  $I^2$ , which measures the percentage of variability in the observed effect estimates that is due to between-studies heterogeneity rather than chance. Furthermore,  $\tau^2$  reflecting the actual amount of variation (the between-studies variance) was reported.

In the moderation analysis an estimate of the average effect was calculated for each level of the moderators, and group mean effect sizes were compared using the  $Q_b$  statistic.  $Q_b$  was used as an omnibus test for detecting between-groups differences for categorical moderator variables

(Hedges & Pigott, 2004). A significant  $Q_h$  score indicates that the estimates of the average effect are different from each other. For continuous moderator variables such as age and the number of years of work experience, meta-regression analyses were conducted using the mean age and mean number of years of work experience in each study (Borenstein et al., 2005). In these analyses  $Q_h$  was used to indicate the significance of the effect of the continuous moderator variables. A significant  $Q_h$  value suggests that estimates of the effect size were predicted by these variables.

To address the file drawer problem, robustness of the calculated estimate of the average effect against the effect of unpublished null results was assessed using the fail-safe  $N$  test (Rosenthal, 1979). In this test the number of unpublished studies that were necessary to produce a nonsignificant result was calculated.

## Results

### *Description of the analyzed material*

Table 1 displays information about the samples, procedures, and measurements applied in the 57 original studies. The analysis included 22,774 participants. A sample size for each study varied from 39 to 2267 participants, with an average of 399.54 ( $SD = 453.74$ ) and a median of 267. Data were collected in various professional groups including teachers (50.88%;  $k = 29$ ), health-care providers (29.82%;  $k = 17$ ), and other services workers such as call center workers and information technology specialists (19.30%,  $k = 11$ ). The mean age was 39.10 years ( $SD = 6.38$ ; range = 25.50–56.00). The mean number of years of work experience was 12.16 years ( $SD = 5.59$ ; range = 1.33–22.14). The studies enrolled from 17% to 100% of women ( $M = 63.12\%$ ,  $SD = 23.71\%$ ); only one original study was homogeneous in terms of gender.

### *Associations between job burnout and self-efficacy*

The meta-analysis conducted for 57 original studies yielded the estimate of the average effect of  $-.33$  (95% CI:  $-.365$ ,  $-.288$ ,  $r^2 = .022$ ; Table 2), for associations between self-efficacy and burnout. The estimate of the average effect between self-efficacy and emotional exhaustion ( $-.31$ ; 95% CI:  $-.342$ ,  $-.268$ ,  $r^2 = .013$ ) was similar to the estimate of the average effect for the relationship between self-efficacy and depersonalization ( $-.33$ ; 95% CI:  $-.374$ ,  $-.275$ ,  $r^2 = .026$ ). The largest estimate of the average effect ( $-.49$ ; 95% CI:  $-.554$ ,  $-.414$ ;  $r^2 = .070$ ), was found for the relationship between self-efficacy and reduced personal accomplishment. When applying the most often used measure of moderation, such as the overlap of confidence intervals (Hunter & Schmidt, 2004), the estimates found for personal accomplishment can be interpreted as significantly larger than those observed for two other components of burnout.

### *The type of measurement as the moderator*

To examine the effect of burnout measurement type on the estimate of the average effect, studies were divided into two groups: (a) MBI-related measurement (87.7%) or (b) measurement other than MBI-related (12.3%; Table 2). The moderation analysis showed a similar size of the estimates of the average effect in studies using the MBI-related measurement and in studies using other measurements,  $Q_h(1) = 2.70$ ,  $p = .10$ .

The original studies were divided into two categories on the basis of the type of measurement used to assess efficacy beliefs: (a) general self-efficacy (31.6%) or (b) self-efficacy specific for the work-related contexts (68.4%; Table 2). Context-specific self-efficacy referred to beliefs about the ability to deal with job-specific tasks, cope with job-specific challenges, or deal with job-related stress and its consequences. Results of the moderation analysis showed that there was no significant difference in the estimates of the average effect calculated for associations between burnout and either (a) general self-efficacy or (b) context-specific self-efficacy,  $Q_h(1) = 2.53$ ,  $p = .11$ .

**Table 2.** Results of meta-analysis of the relationship between self-efficacy and job burnout: overall and moderator effects.

	Range of correlation coefficients ( <i>r</i> ) retrieved from original studies	The estimate of the average effect (weighted <i>r</i> )	95% CI for the estimate of the average effect	<i>n</i>	<i>k</i>	Heterogeneity		Sampling bias estimation: fail-safe <i>N</i>
						<i>Q</i>	<i>I</i> <sup>2</sup> %	
<b>Overall effects</b>								
SE- <i>JB</i>	-.609 to .224	-.327	-.365 to -.288	22,774	57	540.40***	89.64	29,608
SE-exhaustion	-.549 to .007	-.306	-.342 to -.268	16,492	42	239.03***	82.85	12,985
SE-depersonalization/cynicism	-.561 to -.050	-.325	-.374 to -.275	16,201	39	427.29***	91.11	14,157
SE-lack of accomplishment	-.836 to -.068	-.487	-.554 to -.414	12,798	35	860.68***	96.05	24,721
<b>Moderator</b>								
<b><i>JB</i> measure</b>								
MBI measures	-.609 to .224	-.338	-.377 to -.298	18,879	50	422.65***	88.41	23,688
Other measures	-.553 to .045	-.246	-.348 to -.139	3895	7	63.92***	90.61	324
<b>SE measure</b>								
General SE	-.553 to -.122	-.288	-.330 to -.244	9416	18	64.44***	73.62	2536
Specific SE	-.609 to .224	-.342	-.394 to -.286	13,357	39	427.55***	91.11	14,773
<b>Occupation</b>								
Teachers	-.598 to .224	-.377	-.427 to -.324	10,601	29	247.37***	88.68	10,482
Health-care providers	-.498 to -.095	-.264	-.302 to -.224	8618	17	43.61***	63.31	1948
Other	-.609 to .045	-.280	-.382 to -.171	3557	11	113.36***	91.18	634
<b>Country</b>								
Western	-.609 to .045	-.335	-.378 to -.291	16,590	41	364.17***	89.02	16,520
Other	-.519 to .224	-.305	-.408 to -.195	5397	13	186.07***	93.55	1261
<b>Language</b>								
English	-.609 to .045	-.306	-.372 to -.237	5661	19	123.14***	85.38	5661
Other	-.598 to .224	-.338	-.385 to -.290	16,594	36	389.07***	91.00	15,115

Notes: SE = self-efficacy; *JB* = job burnout; 95% CI = critical intervals for the weighted effect size, *n* = sample size; *k* = number of studies. A significant *Q* value indicates that the data are heterogeneous, suggesting that the variability among studies was not due to sampling error. An *I*<sup>2</sup>% value indicates the Percentage of variance due to heterogeneity among studies. A fail-safe *N* value indicates the number of studies with null results that are necessary to overturn the results of the meta-analysis and to conclude that the results are due to sampling bias.

\**p* < .01.  
 \*\**p* < .01.  
 \*\*\**p* < .001.

#### *Type of occupation as the moderator*

To examine whether the type of occupation affected the estimate of the average effect for the relationship between self-efficacy and burnout, studies were divided into three groups: (a) health-care providers (29.8%), (b) teachers (50.9%), or (c) other services' workers (19.3%; Table 2). The moderation analysis showed that the size of the estimates of the average effect depended on the type of occupation,  $Q_h(2) = 11.54$ ,  $p < .01$ . Follow-up tests indicated that the estimates found for teachers were larger than those for health-care providers,  $Q_h(1) = 11.40$ ,  $p = .001$ , and were no different from estimates of the average effect for other occupations,  $Q_h(1) = 2.70$ ,  $p = .10$ . There was no significant difference in the size of the estimates of the average effect found for health-care providers, compared to other services' occupations,  $Q_h(1) = 0.08$ ,  $p = .78$ .

#### *Mean age and the number of years of work experience as moderators*

The effects of age and the number of years of work experience were examined using a meta-regression. Fifteen studies that did not report the mean age of the sample were excluded, resulting in 42 original studies included in this analysis. Results of the meta-regression showed that age was significantly related to the estimate of the average effect for the self-efficacy–burnout relationship,  $\beta = -.009$ ,  $SE = .002$ ,  $z = -5.76$ ,  $Q_h(1) = 33.22$ ,  $p < .001$ . The self-efficacy–burnout associations were stronger among older workers than among younger workers.

Next, we examined whether the number of years of work experience at the current occupation influenced the estimates of the average effect for the self-efficacy–burnout relationship. Twenty-three studies did not report the mean years of work experience; therefore, these studies were excluded, resulting in 34 studies included in this analysis. Results of the meta-regression analysis showed that work experience was significantly related to the average effect size estimate for the self-efficacy–burnout relationship,  $\beta = -.014$ ,  $SE = .002$ ,  $z = -7.37$ ,  $Q_h(1) = 54.36$ ,  $p < .001$ . The burnout–self-efficacy associations were stronger among participants with a higher number of years of work experience than among participants with a lower number of years of work experience.

#### *Culture and language as the moderators*

To analyze the moderating effect of regions where studies were conducted, original studies were classified into two groups: (a) Western culture (71.9%) or (b) other cultures (22.8%; Table 2). Studies that included samples from both Western cultures and other cultures were excluded from this analysis. Similar estimates of the average effect were found in the Western culture and other cultures,  $Q_h(1) = 0.43$ ,  $p = .51$ .

Finally, original studies were divided into two types of primary languages spoken in countries where studies were conducted: (a) English (33.3%) or (b) non-English languages (63.2%; Table 2). In this analysis, studies were excluded when the location where they were conducted was not identifiable. A moderation analysis showed that similar estimates of the average effect were found for English-speaking countries and for non-English-speaking countries,  $Q_h(1) = 0.60$ ,  $p = .44$ .

## **Discussion**

The present study adds to the existing literature by indicating the coexistence of high levels of self-efficacy and low levels of job burnout among professionals of various occupations. The meta-analysis of 57 studies suggested that the association between these two constructs was moderate. The findings might indicate that self-efficacy plays a protective factor role against the components of burnout and/or that low levels of burnout may contribute to higher self-efficacy.

The results showed that self-efficacy forms different associations with the three components of burnout. The differences in the relationships contribute to the discussion on the internal structure of the job burnout construct, as they may be indicative of different processes through which protective factors (such as self-efficacy) may form associations with burnout components. Thus, the findings

may be interpreted as supporting the assumptions made by Maslach et al. (2001), suggesting that job burnout consists of three distinct components.

Emotional exhaustion is often indicated as the core component of job burnout (Maslach-Pines, 2005). Furthermore, there are conceptual proposals to focus on exhaustion and depersonalization components and to exclude personal accomplishments from the components of burnout (Schaufeli & Bakker, 2004). These proposals emerged as the result of a research paradigm that focused on investigating the risk factors for burnout (Greenglass & Burke, 2001). In contrast, the results of the present study suggest that personal accomplishments should not be disregarded as a burnout component, as it may form the strongest links with modifiable personal resource variables, such as self-efficacy. Thus, the personal accomplishments component may be particularly relevant in studies focusing on individual protective factors, guided by such theoretical approaches as social cognitive theory (Bandura, 1997).

Our findings suggest that compared to other burnout components personal accomplishments form the strongest associations with self-efficacy. These results are in line with another meta-analysis focusing on individual protective factors. This analysis showed that autonomy, competence, and relatedness form the strongest associations with personal accomplishments, compared to the other burnout components (Li et al., 2013). In an argument for the association between self-efficacy and personal accomplishments, Schaufeli and Bakker (2004) proposed that these two variables overlap conceptually. It has to be noted that our meta-analysis suggests that the two variables share a modest amount of variance.

The associations between burnout and self-efficacy were similar, regardless of the type of self-efficacy measured (general vs. specific, related to the task at hand). Future research may need to further evaluate the role of self-efficacy, because subtle differences in the conceptualization and measurement of self-efficacy may determine the strength of its association with important health-related outcomes (cf. Burkert, Knoll, Scholz, Roigas, & Gralla, 2012).

We found significant differences between the occupational groups in the self-efficacy–burnout associations. In particular, the associations were stronger for teachers than for health-care providers. So far, systematic reviews either focused on one occupational group (Brown, 2012; Li et al., 2013) or did not account for the moderating effect of the occupation (Alarcon et al., 2009). The strongest associations found for teachers indicate that this occupational group may particularly benefit from interventions enhancing self-efficacy beliefs. Future research needs to continue investigating occupation-specific protective factors that are likely to form strong associations with lower levels of burnout.

The meta-regression results indicate that the strongest associations between burnout and self-efficacy occurred among older individuals or those with more work experience. Previous systematic reviews showed that older age or more years of work experience may be related to lower levels of burnout (Brewer & Shapard, 2004). Our meta-analysis results provide insights into the interpretation of these associations. Older workers have a better established link between the protective beliefs about their own ability to deal with stressful events and lower burnout. They may be more likely to use this protective resource effectively, in order to lower their burnout. Future research needs to identify the modifiable protective factors that help to explain burnout levels in younger and less experienced workers.

The estimates of the average effect were similar across the cultures. This finding has an implication for practice: interventions aiming at burnout preventions and addressing self-efficacy may have similar effects in male and female workers, from both Western and non-Western cultures.

The present study has its limitations. The original studies were mostly cross-sectional in design. No causal conclusions regarding the self-efficacy and burnout relationship can be made. Although we have identified a relatively large number of original studies, the majority of them used MBI as the measure of burnout and enrolled teacher samples. Other measures of burnout were rarely used, and therefore we could not conduct a thorough comparison across the conceptualizations of burnout. Compared to studies on teachers, a low number of studies were conducted among other

homogeneous occupational groups (e.g. social care workers). Therefore, comparisons conducted between occupational groups should be considered as preliminary. Gender may moderate the effects of work stress (Biron & Link, 2014) and the associations between self-efficacy and health among workers (Cieslak et al., 2014); therefore its effects should be considered in future reviews. Across burnout components, the strongest associations with self-efficacy were obtained for the subscale of burnout which is positively worded (i.e. personal accomplishment subscale). Future meta-analyses may need to systematically test for the effects of item directionality. Finally, we investigated the role of only one personal resource variable (self-efficacy). Future studies need to establish if associations between burnout and other variables representing modifiable personal resources may form equally strong or even stronger associations. Identifying the strongest predictors of low levels of burnout may have implications for health promotion in organizations.

Regardless of its limitations, our study offers novel evidence for the relationship between self-efficacy and burnout. Significant associations between these two variables were observed across countries, professions, and age groups. Differences in these relationships indicate that larger estimates of average effects were found among teachers, older individuals, and those with more years of work experience. Furthermore, we provided preliminary support for the notion of the three-component structure of the burnout, demonstrating that the associations between burnout and self-efficacy may vary, depending on the evaluated burnout component.

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# Appendix 19

**SupportNet: A Comprehensive Support System for Secondary Trauma and Burnout**  
 Valerie J. Anderson, Charles C. Benight, Judith P. Bock, Roman Cieslak, Debbie Sagen, Trauma, Health, and Hazards Center,  
 University of Colorado at Colorado Springs and Ashley Fisher, TATRC, USAMRMC

**Project Summary**

A 3-year research and clinical program to assess, treat, and prevent secondary traumatic stress and burnout in military behavioral health providers working with combat-related trauma.

**Support System Design**

**Internet-based interventions**  
Improving social support, psycho-education, and building self-efficacy

**Newsletter/Research advisory**  
Quarterly newsletter and monthly research advisories to address research on trauma treatments with links to articles or papers that address trauma treatment issues. The purpose of the advisories is to supplement ongoing training in evidence-based trauma treatment.

**Trauma-specific training**  
Trauma-specific trainings that are provided by the military will be listed on the internet-based social support platform. SupportNet will provide periodic seminars featuring renowned experts in the field.

**Management/Supervisor "dashboard"**  
The supervisory "dashboard" would be an on-line system to monitor the well-being of supervisees including self-care, case load, burnout and STS

**Individual coaching**  
Individual or team coaching will be provided to help providers meet their personal goals for self-care and work/life balance available in-person, online or via Telehealth technologies.

**Individual trauma treatment**  
Short-term, in-person and solution-focused treatment for individual trauma using evidence-based practices on an as-requested basis. Behavioral health issues outside of specific trauma treatment and urgent or emergent issues affecting safety referred to a network provider.

**Internet-Based Applications**

**Applications**

**Sub-modules**

**Technology Architecture**  
Multiple Platforms  
Behavioral Health Providers

**Social Networking Platform**  
Developing a Social Support System (discussion threads with selected "coaches")  
Developing a Professional Support System (discussion threads with selected "coaches")

**Developing Self-efficacy**  
Assessment - How am I doing?  
Personal Mission Setting/Personal Goals  
Psycho-education: Mindfulness, Burnout, and Secondary Trauma  
Journaling  
Telling the Story  
Mindfulness & Relaxation exercises

**Project Goal**

Managing the effects of **General Job Demands** and **Trauma-Focus Demands** through **Individual and Job Resources**

**Theoretical Model**

**Preliminary Results**

Results from Time 1 Survey show direct and indirect influences on STS.

This research and development project was conducted by the Trauma Health & Hazards Center, University of Colorado, Colorado Springs and is made possible by a research grant that was awarded and administered by the U.S. Army Medical Research & Materiel Command (USAMRMC) and the Telemedicine & Advanced Technology Research Center (TATRC) at Fort Detrick, MD under Contract Number W81XWH-11-2-0153



## Appendix 20

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## 1 INTRODUCTION

Program: SupportNet for Frontline Behavioral Health Providers: Secondary Trauma and Burnout.

### 1.1 Purpose

This functional requirements document provides the information necessary to guide the development of an internet-based supportive intervention for mental health providers working with military clients. It will serve as the basis for the Statement of Work from BlueSun, Inc. Works from this project will be the property of University of Colorado.

### 1.2 Scope

This document will address the requirements for the internet portion of the SupportNet for Frontline Behavioral Health Providers (the “System”) program only.

### 1.3 Background

This system is part of an overall supportive intervention for behavioral health providers. The program is sponsored by the US Army Medical Research and Materiel Command, Telemedicine & Advanced Technology Research Center (TATRC) in connection with a grant to the Trauma Health and Hazards Center at the University of Colorado at Colorado Springs.

### 1.4 Team Members and Roles

The team responsible for designing, developing, implementing, and evaluating this System includes:

Dr. Charles (Chip) Benight is the chief executive for this project. He is a stakeholder in the design, implementation, and evaluation of the system. He has final approval authority over issues of finance, design, implementation, outcomes measures, program evaluation, and product design.

Dr. Valerie Anderson is the UCCS liaison for the project. She is responsible for developing the functional requirements for the system and managing the development relationship between UCCS and Blue Sun. She is responsible for developing and implementing the clinical interventions that make up this project.

Dr. Judith Bock is a UCCS therapist for the System. She is responsible for providing therapy services and, as a Human Factors Engineer, is a stakeholder in the design of the system.

Dr. Robert (Bob) Durham is a UCCS faculty member and serves as the external evaluator for the System portion of the grant. He is a stakeholder in the design of the system as it relates to measuring efficacy, engagement, ease-of-use, and replication potential for the System.

Carrie Yaeger is a Blue Sun contractor responsible for designing and developing the system according to the requirements provided by UCCS. She is a stakeholder in the design and implementation of the system as well as its reliability and stability after release.

Dr. Roman Cieslak is a UCCS Director of Research. He is responsible for research design and implementation including the Objective 1 research project that will inform the implementation details of

this system. He is also responsible for design and implementation of a randomized controlled trial (RCT) that will be conducted using the System.

## **1.5 Assumptions and Constraints**

The project includes some important assumptions and constraints.

### **1.5.1 Assumptions**

It is assumed that the requirements will be identified and documented by February 28, 2012 and that all stakeholders have provided input by that time. It is assumed that BlueSun will have the requisite technical and business resources necessary to negotiate a development contract. Availability of hardware and software platforms for development and deployment of the System by Blue Sun is assumed.

### **1.5.2 Constraints**

The project may be constrained by availability of qualified technical personnel and unexpected hardware or software problems.

## **1.6 Document Overview**

This document describes the methodology for the project along with functional and operational requirements.

## **2 METHODOLOGY**

Drawing from recommendations by Van Gemert-Pijnen et al. (2011) who *“emphasized the importance of a participatory development process involving (end) users—and other stakeholders such as payers, decision makers, insurers, and government officials—to increase the uptake of eHealth technologies”* the functional requirements will be developed and tested using the following procedure:

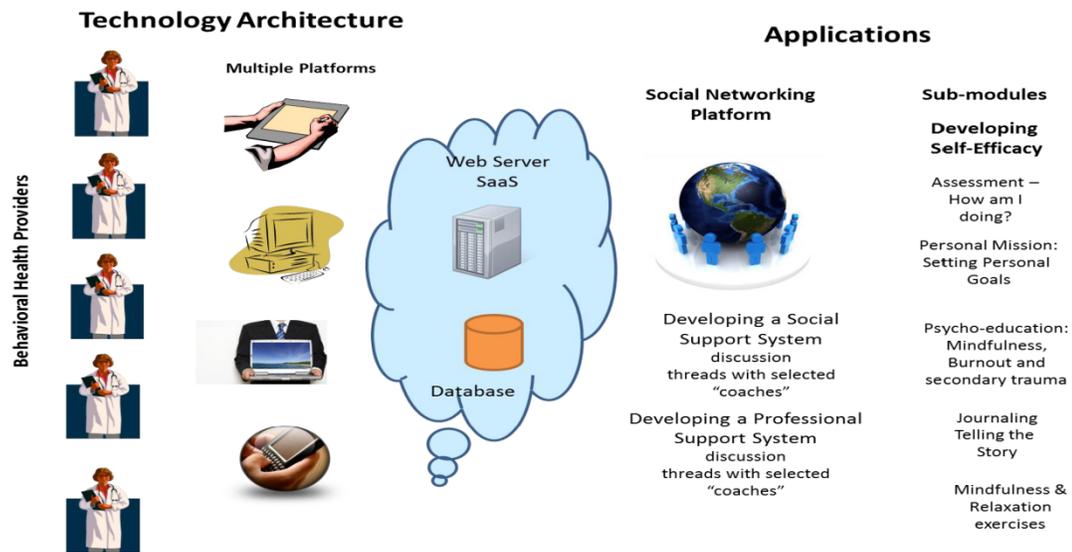
1. Using Social Cognitive Theory and incorporating concepts from the Accelerated Recovery Program (ARP), capabilities and modules will be defined to form the foundation of the System.
2. Identify the requirements for each of the modules in a preliminary functional specification such that a user-interface prototype can be developed.
3. Review and approve the prototype by the intervention and external evaluation teams.
4. Conduct focus group sessions with prospective users from Fort Carson for feedback.
5. Document and incorporate feedback into the final functional specification.
6. Blue Sun converts the functional specification into a Scope of Work with a project plan and milestones
7. Phase I product (as defined in the Blue Sun Scope of Work) released to internal teams for review and beta test.
8. Phase I product reviewed with focus group(s).
9. Phase I product released to users in a controlled release.

### 3 FUNCTIONAL REQUIREMENTS

#### 3.1 Context

The system will be implemented as described in the diagram below.

**Figure 1 – Technology and Application Architecture Diagram**



#### 3.2 User Requirements

Users of the system will be mental or behavioral health providers seeking support for job burnout and secondary traumatic stress from working with traumatized clients. Users have a broad range of professional education, professional stressors, and familiarity with technology. At one end of the spectrum are users who work with clients/patients in a case management capacity. They are likely to lack training and experience in working with traumatized clients/patients in a therapeutic relationship. Their understanding of psychological theory and practice is limited and may be more susceptible to burnout due to lack of comfort with the people they work with each day. On the other end of the spectrum are users who are medical or psychological professionals with advanced, often doctoral level, degrees. They are trained in therapeutic interventions for trauma and work with traumatized clients/patients as the primary focus of their jobs.

Users of the system are likely to also have a broad range of comfort with technology. At one end of the spectrum, users may not be familiar with the interactional standards of common web-based systems. They may also be unfamiliar with more contemporary technology such as Smart phones and tablet computing. On the other end of the spectrum may be the “power user” who is comfortable with newer technologies and may have expectations about how the system will operate based on experience with other web-based and Smart phone applications.

The system needs to be able to meet the usability requirements of a broad range of users. The design should be a Motivational Design (Visser & Keller, 1990) that incorporates user motivation and social engagement to provide support in an effective and engaging manner. User experience will be measured according to the Design Principles promulgated by R. Frank (Frank, 2003) and Visser & Keller (1990).

Motivational design principles focus on motivation as an often missing element of design. It is assumed that most users have little extrinsic motivation to use the System. Therefore, intrinsic motivation factors need to be considered in the design and implementation. Motivation can be influenced by the four factors of the ARCS model (Visser & Keller, 1990): Attention, Relevance, Confidence, and Satisfaction. Attention refers to the extent to which the system will stimulate the user to stay interested in the system and seek to explore topics and modules more deeply. Relevance relates to the extent to which the system meets the goals and expectations of the user. Confidence relates to the user's level of mastery and self-efficacy in using the system and finding information. Satisfaction refers to the positive feedback and increased self-esteem that comes from learning new material and being able to integrate it into a new way of being.

The following design principles are described by Frank (2003):

Usefulness – The system must provide “. . . accurate content that is relevant . . .” (Frank, 2003, p. 1) for the users. It should use dynamic and graphical content that provides information that is tailored to the user's level of symptoms (as measured by the assessment) and knowledge (as assumed by level of professional education). The user should not be demotivated by being presented with information that is not relevant to their particular needs.

Ease-of-Use – The site should be intuitive and navigation must allow for easy access to information without requiring unnecessary mental energy. Modules and content should be logically ordered and the placement of menus and buttons should be intuitive. The most important information should be at the top of the screen and search capabilities should be available on every form.

Efficiency – The system should be organized in a way that allows for information to flow in a clear, linear way. Unnecessary scrolling should be avoided and short-cuts that allow for movement between modules should be available.

Engagement – The system should engage the user and provide value that encourages the user to return and stay engaged in the process. Use of graphics, video, and audio should be engaging without being annoying.

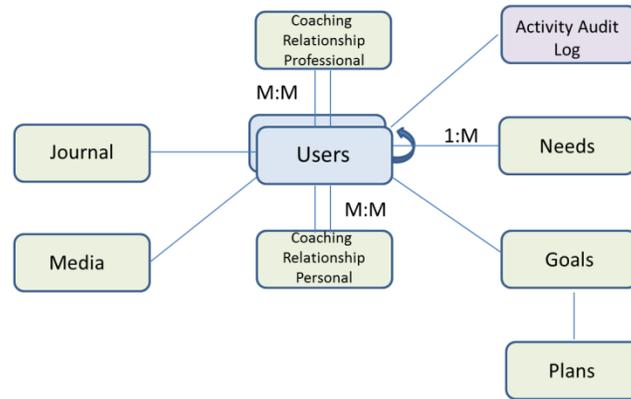
Trustworthiness – Trust is the foundation of any relationship particularly for online health related systems (Vega, DeHart & Montague, 2011). Trust is also a necessary pre-requisite to building social capital (Adler & Kwon, 2002). The system should contain content that comes from authoritative sources and can be trusted by the user. Content should be evaluated and monitored regularly in order to assure that the latest knowledge is incorporated within it. Users must feel that they are operating within a secure environment where privacy and confidentiality are protected.

### 3.3 Logical Data Model

The entity-relationship model shown below should serve as a basis for developing a more detailed database design to support the functional and system-level requirements described herein.

Figure 2 – Entity Relationship Diagram

#### Entity Relationship Diagram



### 3.4 Functional Requirements – User and Social Support Capabilities

The system should be developed on a platform that supports social networking, engagement, and measuring and developing self-efficacy. The platform should provide the following capabilities:

#### 3.4.1 Registration and Authentication

Users must first register to receive authorization to the application. Only users with a .mil email address will gain access. The registration process will gather basic identifying information such as Name, Photo, Email address, Cell Phone, Location, Position, Areas of Interest, and Qualifications. Other information required to set up social and professional support networks will include personal and professional needs and availability to provide coaching or supervisory support through the network.

Upon initial registration, users will be presented with a disclosure and disclaimer and will be asked to comply with the use conditions of the site before they will receive authorization to use it. As a minimum, the user will be asked to agree to the U.S. Department of Defense Social Media User Agreement which states:

*This is the Department of Defense Social Media User Agreement. It has been reviewed and approved for use for all official Department of Defense and Service social media sites. We encourage you to copy and paste this text and/or link to this user agreement page from your social media sites.*

The following User Agreement ("Agreement") governs the use of official Department of Defense social media sites and pages to include social networking pages, blogs and file sharing sites, along with all policies applicable to DoD information. Please read the rules contained in this Agreement carefully. You can access this Agreement any time. Your use of any aspect of the websites will constitute your agreement to comply with these rules. If you cannot agree with these rules, please do not use the websites. The Agreement may be modified from time to time; the date of the most recent revisions will appear on this page, so check back often. Continued access of the website by you will constitute your acceptance of any changes or revisions to the Agreement. Your failure to follow these rules, whether listed below or in bulletins posted at various points in the website, may result in suspension or termination of your access to the website, without notice.

**Comments By Others Are Not Endorsed:** The Department of Defense does not necessarily endorse, support, sanction, encourage, verify or agree with the comments, opinions, or statements posted on the website. Any information or material placed online, including advice and opinions, are the views and responsibility of those making the comments and do not necessarily represent the views of the Department of Defense, the United States Government or its third party service providers. By submitting a comment for posting, you agree that the Department of Defense, the United States Government and its third party service providers are not responsible, and shall have no liability to you, with respect to any information or materials posted by others, including defamatory, offensive or illicit material, even material that violates this Agreement.

**Editing and Deletions:** The Department of Defense reserves the right, but undertakes no duty, to review, edit, move or delete any material submitted as a comment to the information provided for display or placed on the social media sites in its sole discretion, without notice. Comments submitted to these sites will be reviewed and a representative sample may be posted on the site or inappropriate comments may be deleted at the sole discretion of the Department of Defense. We hope to receive submissions from all viewpoints, but we ask that all participants agree to the following Terms of Participation:

- To ensure constructive questions, please post only questions directly related and relevant to the Department of Defense.
- Refrain from posting questions that contain threats, obscenity, material that would violate the law if published here, abusive, defamatory or sexually explicit material.
- Submissions containing the following will be deleted:
- Contains obscene or threatening language or discrimination (hate speech) based on race, sex, gender, religion, national origin, age, or disability.
- Promotes services or products (not including non-commercial links that are relevant to the topic)
- Includes any personal or sensitive information (phone numbers, email or postal addresses)
- Operational Security (OPSEC). All personnel (including families and friends of service members) have a responsibility to ensure that no information that might put our military members in jeopardy or would be of use to our adversaries is posted to websites that are readily accessible to the public. Not surprisingly, that information includes, among other things, technical information, operation plans, troop movement schedules, current and future locations of military units and ships, descriptions of overseas bases, details of weapon systems, or discussions of areas frequented by service members overseas. Other information that's not as obvious but should also not be discussed in an open forum includes daily military activities and operations, equipment status, unit morale, and results of operations. Any of these topics, if

released in an open medium, have the ability to provide our adversaries opportunities to harm our military members.

**External Links (including Advertising Links):** *The appearance of external hyperlinks does not constitute endorsement by the Department of Defense of the linked websites, or the information, products or services contained therein. The Department of Defense does not exercise any editorial control over the information you may find at these locations. All links are provided consistent with the stated purpose of these websites.*

**Disclaimer:** *Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government, and shall not be used for advertising or product endorsement purposes. With respect to documents available from this server, neither the United States Government nor any of its service members or employees, makes any warranty, express or implied, including the warranties of merchantability and fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.*

**Last updated 19 January 2011**

All user information will be saved to a database and an email verification will be sent to the user. Once the user is authorized and authenticated, he/she will be given access to the system. Access control will consist of a username (email address is preferred) and password specified by the user.

Users will be required to enter their credentials before they will be allowed to subsequently use the system. Users must be able to change their passwords and profile information without requiring human intervention at any time. Users should be classified in terms of their authority to make changes to the system. Only an “administration” user should be able to delete a user and all of his/her information.

To support a planned randomized controlled trial, the system must be designed so that an Informed Consent can be obtained before a user can register to use the system.

#### **3.4.2 The Social Networking Platform**

The social networking platform will provide the user with the ability to identify his/her social and professional networks. The importance of developing a social networking system is based on Chen’s (2007) view that professional support networks are “. . . centered upon communication and interaction of participants to generate member-drive knowledge of a specific domain, and resulting in a relationship being built.” This platform will allow for the development of social capital for the organization (see Adler & Kwon, 2002).

The platform should allow the user to locate and invite another user to be part of their “social” or “professional” network. The platform should use the concept of “friends” from other social networking sites (such as Facebook) but the relationship should be referred to as “coach” rather than “friend”. The user should be able to locate/find “coaches” and suggest new “coaches” based

on the user's profile and areas of interest and need. Users should be able to set up and manage public or private groups and users should be able to join or invite other users to join those groups. Users who are members of groups can post messages or information on to the group's discussion thread.

### **3.4.3 The "Home Page"**

Once logged in, users will be taken to their home page. The home page will guide the user through the System. The user will be welcomed and offered various choices/suggestions. The content of the Home Page will include:

- 1) Welcome message with a suggested activity
- 2) Current status of completion of modules
- 3) Recent messages from social and professional support networks and groups
- 4) Most recent assessment results with a link to a graph of assessment history
- 5) Link to ASSESSMENT module that includes one or more assessment instruments and provides a "score" (see below).
- 6) Link to LOCATE SUPPORT that allows the user to find support for a particular topic or problem
- 7) Link to GOALS module with an invitation to set goals, review goals and graphical indicator of progress of current goals (see below).
- 8) Link to PSYCHOEDUCATION module that will contain content regarding resiliency, mindfulness, burnout, secondary traumatic stress, and compassion fatigue (see below).
- 9) Link to RELAXATION module that will contain content that will help reduce anxiety and improve self-regulation (see below).
- 10) Link to JOURNALING module (see below).
- 11) Coach's recent activities – and suggestions for new coaches
- 12) Recent posts on managed groups they have joined
- 13) Recent publications in area of interest (based on user profile)
- 14) Recent news on areas of interest (relevant RSS feeds)
- 15) History of activities

## **3.5 Functional Requirements for Supervisor's Dashboard**

(To Be Supplied Later)

## **3.6 Functional Requirements: Self-Efficacy and Self-Regulation Modules**

### **3.6.1 Assessment**

The assessment module should provide the capability to administer and score one or more objective assessments. Initially, the module should provide for support of 3 instruments to measure: burnout, coping self-efficacy and secondary traumatic stress. The user may take the assessment at any time and more than one time. A history of the scores should be stored so that the user can see a graphical history of how they are and have been doing. Depending on the score, the user will be presented with recommendations about what modules might be appropriate for them to address their specific needs. The

content for the assessment instruments and the feedback/recommendations will be developed by the UCCS SupportNet team.

### **3.6.2 Set Up or Change Goals and Plans**

The goals module should allow the user to set up, modify, or delete personal and professional goals and develop a “personal mission statement”. These goals should be identified as “personal” or “professional” goals. The system should be pre-loaded with a set of common self-care goals that users can then extract and use. The pre-loaded goals will be identified by the UCCS SupportNet team. Each goal should have a plan attached to it so that users can track their progress on the goals. The system should prompt the user to update their progress on their goals every 7 days from the date the goal was entered and until the goal is complete. If progress is not being made on a goal for 14 or more days, the system should provide the user with information about common obstacles to achieving goals. The content for this information about obstacles will be developed by the UCCS SupportNet team. Goals can be shared with the social support network via the Social Networking platform messaging or posting capability.

### **3.6.3 Psycho-education**

The psycho-education module is a learning resource for information regarding trauma, secondary traumatic stress, burnout, compassion fatigue, and developing resiliency. The content for this module will be in the form of text, graphics, audio clips, and video clips which will be served up to the site from a central content database depending on user demographics. The content will be provided by the UCCS SupportNet team.

### **3.6.4 Relaxation**

The relaxation module will help user’s learn to improve self-regulation if they are not already familiar with these skills. The content for this module will be in the form of text, graphics, audio clips, and video clips which will be served up to the site from a central content database depending on user demographics. The content will be provided by the UCCS SupportNet team.

### **3.6.5 Journaling**

The journaling module should be a free-form text subsystem where users can tell their “story”. The journal content will be developed by the user. It would not be shared with any other user.

## **3.7 Functional Requirements: Social Networking Modules**

### **3.7.1 Set Up, Change and Locate Support**

The social networking platform should support the ability to insert, change, and delete other users from a personal or professional network or group. Potential support staff, or “coaches”, would be recommended based on the user’s current physical location. Users should identify their willingness to be a coach for either personal or professional support and should be able to identify their areas of expertise.

### **3.7.2 Relating Social Support to Goals**

The goals module should allow the user to connect a particular coach to a particular goal or set of goals. The user should be able to send updates about progress toward achieving goals to his or her personal or professional network.

### **3.7.3 Set Up or Change Areas of Interest**

Users need to be able to add, change, or delete areas of interest. The areas of interest will be used to customize the kind of information that will be pushed to the user by other users with similar interests or the system.

## **4 OTHER REQUIREMENTS**

### **4.1 Program Assessment Requirements**

Program Assessment requires that the system be able to provide overall site data and individual user data. Site data should include, as a minimum, number of logins each day, number of visits to each page of the site, average length of time spent on each page (visit duration), flow of users between pages, and bounce rates. In addition, each user's behavior should be tracked by recording the number and frequency of logins, visit duration, pages viewed, length of time spent on each page, revisits, and flow between pages. A time-out function should be implemented so that visit duration statistics are not skewed by users who leave their computer for extended periods of time (e.g., users are automatically logged off after 20 minutes of inactivity).

After completion of each module (e.g., psychoeducation, relaxation, etc.) and when a user exits a module, the user should be presented with feedback questionnaires which should be a survey including up to 30 items. The items will be designated by the SupportNet Program Evaluation team. A blank comments box with a prompt for participants to provide comments or open answers should be given. All responses should be traceable back to user ID number so multiple feedback assessments can be compared for the same participant.

### **4.2 Dynamic Content**

Bandura (1990) discusses the impact of "models" in the process of making change and notes that the impact of a model is greater when it matches the user's reference group (demographics such as age, gender, etc.) suggesting that tailoring the multi-media objects to the demographics of the user would increase engagement and skills enhancement. Therefore, the system needs to be able to dynamically load content. The user's demographic information should be captured during the registration process. This information will be used to dynamically select appropriate graphical, video, or audio content in the psycho-education and relaxation modules.

### **4.3 Software Interfaces**

If possible, the system should be able to interface with existing modules that form the BlueSun Disaster or Trauma Recovery sites. In particular, the relaxation and journaling modules could potentially be re-used in this system if it is reasonably and technically possible to do so.

### **4.4 Communications Interfaces**

The system must be platform, operating system, and communications independent. It must be able to run on Explorer, Firefox, and Safari platforms accessing the database through an internet (WAN, LAN or 3/4G) connection.

#### **4.5 Hardware Requirements**

The system should run on multiple platforms as described in the technology architecture above. The target platforms are thin-client workstation, personal computer, tablet computer, laptop computer, and SmartPhone devices.

#### **4.6 Operational Requirements**

The system needs to be operational 24 hours a day, 7 days a week. It is expected that late night and early morning periods may have slower traffic but the application needs to be available during those times to meet the requirements of users who may be deployed or in overseas locations.

#### **4.7 Security and Privacy**

The security and privacy of user data in the system needs to be protected. Because BlueSun will be hosting the System application, the following requirements need to be met.

- A. Protection for the following breaches of security needs to be provided:
  - 1. Loss or corruption of data
  - 2. Disclosure of secrets or sensitive information
  - 3. Disclosure of privileged/private information about individuals
  - 4. Corruption of software or introduction of malware, such as viruses
- B. The following type(s) of security are required:
  - 1. Physical security.
  - 2. Access by user role or types. Access should be controlled based on user type. An administrative user can set up, change, or delete users but non-administrative users cannot.

#### **4.8 Usage Auditing**

The site must track how each user is using the system including the number and frequency of logins, visit duration, pages viewed, length of time spent on each page, revisits, and flow between pages.

#### **4.9 Reliability**

System failure will not result in loss of life or revenues. However, users will lose interest and confidence in the system if it is unreliable. Therefore, the goal for system reliability is a mean-time-between-failures of 30 days and mean-time-to-repair of 20 minutes.

#### **4.10 Recoverability**

- A. In the event the application is unavailable to users (down) because of a system failure it should be returned to service within 20 minutes.
- B. In the event the database is corrupted, data needs to be restored to a backup point of no later than current time minus 24 hours.
- C. If the processing site (hardware, data, and onsite backup) is destroyed, the system needs to be made available on an alternative site within 12 hours.

#### **4.11 System Availability**

The system needs to be available 24 hours a day, 7 days a week. A maintenance period of 2 to 4 hours during the late evening hours on Friday, Saturday, or Sunday is acceptable.

#### **4.12 General Performance**

- A. Response time for users must be within normal limits for web applications.
- B. System throughput must be able to accommodate 100 simultaneous users.

#### **4.13 Data Retention**

The system shall retain application information for up to three years. When a user is deleted, his or her application information shall be archived for a period of one year.

#### **4.14 Validation Rules**

The system should validate that the user is an authorized user by checking the authorization code provided at registration. Unauthorized users should not be able to access any part of the site except a specific registration page. All user data records should be date- and time-stamped to allow for system audits.

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## **Appendix 21**

Process and Outcome Evaluation for SupportNet

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## Executive Summary

The process and outcome evaluation of the SupportNet project demonstrates that the objectives of the program are partially being met. The SupportNet intervention aims to alleviate burnout and secondary-traumatic stress (STS) among military mental health providers, who work with returning service members or combat veterans suffering from traumatic stress through use of a website with different components (goal-setting, life-balance wheel, social networking, resource-room, self-assessment, and take-5), and SupportNet coaching sessions. The intervention was designed using Social Cognitive Theory as a framework for providing support for military behavioral health providers by promoting secondary traumatic growth and work engagement by increasing their environmental support, coping self-efficacy, and self-care behaviors.

SupportNet staff and mental health providers in the RCT participated in the program evaluation. Process and outcome evaluation data consisted of quantitative and qualitative data from both the SupportNet staff and participants, in addition to website usage tracking data for users. Data were collected from December 2012 through June 2014. The following components were measured and assessed as part of the process evaluation:

- Fidelity to treatment: SupportNet project demonstrated adequate fidelity to treatment.

SupportNet outcomes were not statistically significantly different from pre- to post

intervention, but the data showed trends in the hypothesized directionality for all outcomes except for work-engagement. Overall, participants partially agreed SupportNet improved their ability to cope with work stress, but were ambivalent about the intervention's role in improving their professional relationships.

- Implementation fidelity: The SupportNet intervention was shown to be implemented as planned. In the RCT phase of the project, the SupportNet staff was responsive and adaptive to change throughout the implementation process. While, impact evaluations were unable to be conducted, video was not used as a channel for delivery, the intervention focus shifted from STS to burnout, and off-base providers were included, Social Cognitive Theory was a strong guiding force in the development and implementation of SupportNet, which was seen by many SupportNet staff as being a major strength of the project. Additionally, the staff were seen as being responsive to the process
- Dose delivered: Technical difficulties and nonuse of video modality aside, all intended SupportNet intervention components were implemented according to plan.
- Dose received: Participants who engaged the most with the intervention and received coaching ( $M = 69.50$ ,  $SD = 7.29$ ) showed higher satisfaction with the intervention. Twenty-one participants (35%) actually logged onto the website for 20 minutes or longer. 15 (25%) participants completed the post-intervention outcome measures, 11 (28%) participated in the SupportNet coaching protocol. Participants cited the usefulness of the life-balance wheel and the goal-setting modules, and enhanced self-care as being the usefulness of the website.
- Reach and recruitment: A convenience sample was recruited through cold calls made to military mental health providers nationally and through research solicitations posted on professional *Listservs*. The pre-intervention response rate was lower than expected;



however, 60 participants were included in the RCT, as planned due to burnout cut-off scores ( $\geq 2$ ) being adjusted to include the minimum number of participants in the RCT and thus, it was unclear whether those who were included were actually in risk of burnout and a part of the SupportNet intervention's target population.

- Context: The project was challenged by the task of recruiting providers who were at risk of burnout to participate in an intervention that required a time commitment. It is possible that participants did not engage with the SupportNet intervention as a function of their level of burnout. Lack of military support was cited by staff as being a barrier to the project that likely affected recruitment. Finally, the time of recruitment for the RCT coincided with the 2-week government shutdown in October 2013, which resulted in government employees being furloughed. Since the project itself was funded by the Department of Defense, the project was likely affected through contract delays and limited ability to recruit providers working for the military.

As noted above, outcomes did not show statistically significant differences from pre- and post-intervention; however all outcomes, except for work engagement, trended in their expected directions with Cohen's *d* effect sizes ranging from medium to large. Outcomes were likely affected by the small sample size at post-intervention, in addition to the low inclusionary cut-off for the burnout measure. While outcomes of the SupportNet project did not garner the effects expected these initial results highlight the potential efficacy of the intervention in the future.



## **Process and Outcome Evaluation for SupportNet**

The SupportNet intervention aimed to assist mental healthcare providers in reducing potential job burnout and secondary traumatic stress (STS) through improved social support and self-efficacy is nearing its implementation phase. As required by the granting agency, an independent external program evaluation was required. The process evaluation of the SupportNet project was primarily for summative purposes, but it may also serve formative purposes in future replication of the intervention.

Process evaluations are typically used to determine the extent to which the intervention is being delivered and implemented according to the stipulations enumerated in the program proposal. During the development and implementation stages of the program, process evaluators use a systematic measurement to assess how well the program is meeting its specified goals, the extent to which the program is reaching the intended target group, and how satisfied participants are with the program. In addition, process evaluation results may be used to make changes in the delivery or content of the implementation to improve the intervention(s). The following section



briefly reviews the SupportNet project, its ideal implementation, and then outlines the specific questions answered and methods to that were employed in that evaluation. Change scores on the described measurement methods constituted the outcome evaluation component.

### **SupportNet Project**

The SupportNet project attempts to provide an integrated approach to helping prevent and treat job burnout and STS among military mental health care providers. From a social-cognitive theory perspective (Bandura, 1997), the proposed website and integrated treatment would enhance the perceived social environmental support, enhance coping self-efficacy to handle work-related stress, and facilitate the setting and mastering of goals (both professional and personal).

Effectiveness of the intervention was to be demonstrated by reducing participants' scores on measures of job burnout and STS and increasing positive outcomes, including work engagement and coping self-efficacy. Through the use of randomized clinical trials (RCTs), the project developers intended to demonstrate the effectiveness of the intervention on these key outcome variables after utilizing the website for a specified time period (eight weeks).

The primary stakeholder groups include the SupportNet researchers and staff as well as the participants in the RCTs. The secondary stakeholders include the U.S. Army Behavioral Health Department associated with Evans Army Community Hospital, Fort Carson, the Department of Defense, military clients, spouses and colleagues of primary stakeholders. Although an impact evaluation was not performed on these stakeholder groups.

### **Complete and Acceptable Program Delivery**



The ideally implemented SupportNet program was expected to utilize all components of the intervention, including the online components (e.g., social networking platform, self-assessment, etc.) and getting personalized coaching for two of the three groups in the RCT from a designated SupportNet behavioral health clinician. The website was to deliver the majority of the components via modules available from the home page. The modules included: Self-Assessment, Goal Setting, Life-Balance Wheel, Take 5, and Library/Resource Room (psychoeducation). Through the Social networking platform, providers had the ability to locate social support from designated mentors and coaches. Mentors refer to other system users (providers) who have identified themselves as having a specialized expertise in a given area and were willing to provide mentorship to other system users. Mentors were identified as being individuals who showed high work engagement and low risk for burnout in their pre-intervention test scores. Coaches refer to a SupportNet behavioral health clinician who provided coaching services to system users. The social networking platform, website modules, and coaching are discussed in more detail below.

**Social Networking platform.** A major overarching component of the SupportNet website was the social support it provides. Social support from personal and professional mentors was accomplished via the social networking platform. Individuals had the opportunity to seek out mentors related to areas of interest and professional problems they are facing. All participants were asked to indicate areas of expertise, so they may function as mentors to other providers. The social networking platform was to provide an engaging, rich, helpful experience for its users and increase providers' perceived social support.

**Goal Setting and Life Balance.** Goal setting is another important component of the intervention that should function to increase participants' self-efficacy through mastery experiences. Based on



the self-assessment and consultation with a designated coach, providers were to create their own professional and/or personal goals, share them with their social network (if desired), track progress, and specify rewards for goal completion.

A life balance wheel allowed providers to identify and assess values and key areas of their lives and functioned to guide goal setting in various life domains. The domains of the life balance wheel included Home/Physical Environment, Health & Fitness, Learning & Growth, Career/Work, Money/Finance, Family/Friend/Partner/Love Relationships, Fun, and Spirituality. For each domain, providers rated their current level of satisfaction and their desired level of satisfaction. They were also able to set goals to improve in areas in which they desire more satisfaction.

**Self-Assessment.** The assessment module should allow providers to complete self-report questionnaires that provide a reliable and valid measure of their behavior or functioning in the following areas: social support, burnout, coping self-efficacy, secondary traumatic stress, perceived stress, and work engagement. The providers received immediate feedback as to their scores and were able to track their scores over time if they completed the measures repeatedly. Feedback was provided based on their scores, and directed providers to other modules of the website that may be appropriate for their specific needs.

**Resource Room.** Psychoeducation should supplement the interactive activities by contributing to participants' knowledge of a variety of relevant topics, including STS, secondary traumatic growth, job burnout, work engagement, social support, self-efficacy, self-care, well-being, and work/life balance. The SupportNet resource room content provided a resource for providers to learn more information about relevant topics to increase their awareness of issues such as



burnout and STS as well help facilitate accomplishing their goals. The resource room also was to provide information about evidence-based treatments to improve clinical skills. The content was provided by the SupportNet team and was ideally expected to be updated to stay current with research and publications.

**Coaching.** Each provider was assigned a coach to assist in the setting and achieving of personal goals. Ideally, each provider in Trial Groups A and B was expected to utilize and benefit from the six sessions with their designated SupportNet behavioral health clinician. Potential modalities of communication between providers and coaches included speaking on the telephone. If needed, referrals for personal therapy in some instances were planned to be offered to providers. Personal therapy was to be provided by a referred party, not a SupportNet staff member; however, this did not occur during the RCT.

### **Process Evaluation Questions and Methods**

Steckler and Linnan (2002) specified seven components to be measured and evaluated in process evaluations of public health interventions, including context, reach, recruitment, dose delivered, dose received, fidelity to treatment, and implementation. Based on the recommendations of Saunders, Evans, and Joshi (2005), the process evaluation plan included the following components: implementation fidelity, dose delivered, dose received, recruitment, reach, and context. Each of these components is detailed below.

**Fidelity.** The implementation of the intervention reflects the extent to which the intervention has been applied and received by the target population. The fidelity refers to what constitutes high quality implementation (Saunders et al. 2005). Fidelity means the extent to which the intervention was delivered as intended, and represents a measure of quality and integrity of the



intervention as planned by its developers (Steckler & Linnan, 2002). The SupportNet intervention utilized social cognitive theory as a framework for providing benefits to primary caregivers within the military. As outlined in its proposal, SupportNet should reduce burnout and secondary traumatic stress and promote secondary traumatic growth and work engagement by improving environmental support, coping self-efficacy, and self-care behaviors and skills. From a social-cognitive perspective, the fidelity of the SupportNet project is defined as the extent to which the intervention improved mental health care providers' perceived efficacy to cope with the demands of their jobs and utilize personal and professional resources effectively. To measure this, participants were asked to what extent the intervention succeeds in improving work engagement, coping self-efficacy, and self-care behaviors. Additionally, SupportNet staff was asked via self-report questionnaire delivered via email regarding their perceptions of how the SupportNet project was reaching its intended goals.

Adherence measures the extent to which participants followed the intervention as intended.

Adherence is of particular concern for web-based intervention research, for attrition can undermine the statistical power of the results and the generalizability of the study. Quantitative measures of adherence include number of logins, completed modules or activities, visits and posts to forums, and self-reported completion of activities in daily life away from the program (Donkin, et al., 2011). In their review of e-therapies, Donkin et al., concluded that module completion was most consistently related to outcomes in psychological health interventions, and number of logins was most related to outcomes in physical health interventions. Tracking participant usage of the site was a crucial component in the development and ongoing process evaluation of this web-based intervention. Implementation fidelity was measured by the following process evaluation questions:

1. *To what extent was the intervention implemented as planned?*

Measured by: SupportNet staff report and process evaluation; participant self-report questionnaire

2. *To what extent was the intervention implemented consistently with the underlying theory?*

Measured by: SupportNet staff report and process evaluation

**Dose delivered.** The dose delivered refers to the amount of intended units of the intervention provided to participants. Measuring dose delivered of an intervention was accomplished by answering the following question:

3. *To what extent were all of the intended components of the SupportNet intervention implemented?*

Measured by: Usage tracking data; participant self-report questionnaire

Each participant's number of logins, total amount of time spent on the site, module completion, and time spent engaged with each component all function as quantitative indicators of meeting this objective. Various multimedia channels were utilized in delivery of the internet component of the intervention to enhance user engagement. SupportNet proposed several delivery modalities to be used, including but not limited to: audio, video, email correspondence and support, and discussion threads. Dose delivered means the amount of intended units of the intervention provided to participants, whereas the dose received refers to the amount of units of the intervention participants were actually exposed to.

**Dose received.** Related to participant engagement in the program, dose received reflects the extent to which participants used modules, resources, or techniques recommended by the program (Murta, Sanderson & Oldenburg, 2007). The dose received represents the extent to



which participants actively engaged in the intervention and interacted with the delivered intervention components. Dose received can be conceptualized as containing elements of both exposure and satisfaction (Saunders et al., 2005).

Interactivity in an online intervention includes providing feedback and tailoring content to individual users, active participation as opposed to passive user behavior, increases user control and involvement in decision making, and real-time responsiveness (synchronicity). The degree of synchronicity refers to the timing and responsiveness in communication, feedback and support from professional clinicians, other users, or from the program itself (Proudfoot et al., 2011). Synchronous communication is immediate, such as real-time chat via Skype or some similar programs. Asynchronous communication is delayed, such as email responses and blogs or forums. In the SupportNet intervention, the use of email and posting on the social network represent asynchronous communication. Feedback on self-assessments was considered synchronous. Consistent with researchers' recommendation for interactivity (Proudfoot et al., 2011), SupportNet offered modules with interactive elements, such as self-assessment, goal setting, life-balance wheel, tailored feedback and the resource room.

***4. To what extent were participants satisfied with the intervention received?***

Measured by: Participant self-report questionnaire and qualitative report

***5. To what extent did participants use the various components of the SupportNet intervention?***

Measured by: Participant self-report questionnaire and usage tracking data

***6. Did the participants find the intervention components useful?***

Measured by: Participant self-report questionnaire and qualitative report



**Reach and Recruitment.** Reach refers to the proportion of the target population that participates in the intervention. The target population should be defined in terms of demographic factors, symptoms or problem area, psychological indices (e.g., self-efficacy, motivation, and locus of control), and technological considerations (e.g., computer ability) (Proudfoot et al., 2011). Reach can be determined by registering the number of invitations sent and the characteristics of the participants. Reach also refers to the accessibility of the intervention; the way by which participants accessed the intervention must be clearly defined as well as eligibility and exclusion criteria (Proudfoot et al., 2011). An additional consideration for internet interventions is readiness for mass dissemination, including information about the capacity for the program to be released on a larger scale and reach a wider audience (Proudfoot et al., 2011). A primary objective in the outcome evaluation is to provide recommendations for potential replication to other military posts. Relatedly, recruitment refers to procedures used to attract participants, and it can occur at the individual and organizational level.

**7. *Was the intervention delivered to the minimum number of participants?***

Measured by: Demographic information; usage tracking data

**8. *What procedures were followed to recruit participants?***

Measured by: SupportNet staff report and process evaluation

**Context.** Context refers to aspects of the larger social, political, and economic environment that may have influenced implementation of the intervention (Steckler & Linnan, 2002). Regarding the SupportNet project, the larger context of the military culture in general and Fort Carson specifically, was considered. Data sources for context included SupportNet staff, participants, and key informants from Fort Carson and Evans Army Community Hospital.

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## Method

### Participants/Stakeholders

The primary stakeholders included the SupportNet researchers and staff as well as the participants in the RCT. The secondary stakeholders included Evans Army Community Hospital, Fort Carson, the Department of Defense, military clients, spouses and colleagues of primary stakeholders.

### Measures

**SupportNet Staff Report.** The project developers, researchers, and other staff members who contributed to the development and implementation of the SupportNet project were asked questions that relate to answering the process evaluation questions outlined above. This brief questionnaire contained both quantitative and qualitative measures of each individual's role in the project, perceived barriers to ideal project implementation, and confidence in the project reaching its goals (see Appendix A). The quantitative portion consisted of seven items that were measured with a 6-point Likert-type scale (1 = *Strongly Disagree* to 6 = *Strongly Agree*). Additionally, a more in-depth open-ended questionnaire functioned to obtain more detailed, qualitative data related to the SupportNet project development, implementation, and its progress in reaching its goals. Staff members were asked about perceived obstacles to ideal implementation of the project so that potential barriers may be addressed. This self-report from the staff was specifically useful in informing questions 1, 2, and 8 specified above in the process evaluation questions and methods section (See Table 1 below).

**Participant Report/Online Questionnaire.** A comprehensive questionnaire was given to all participants after the intervention. Part of this comprehensive questionnaire was developed by



the SupportNet team, and it measures responses to specific aspects of the intervention. These items measure knowledge and skills gained and perceived behavioral changes. Additionally, the program evaluation team added to this comprehensive questionnaire, the SupportNet Satisfaction Inventory (SSI), which included items that assessed overall program satisfaction (see Appendix D). Participants' attitudes toward the quality and content of the intervention as a whole were assessed in this longer, more in-depth questionnaire. Questions were answered by a 7-point scale ranging from (1 = *Strongly Disagree* to 7 = *Strongly Agree*). Lastly, the online questionnaire also provided the opportunity for participants to offer additional feedback in their own words. Participants were asked to provide suggestions and comments on the program as a whole as well as for specific components of the intervention.

**Participant Feedback on Website.** Participants had the opportunity to choose to give feedback when interacting with the website. Participants could choose to give feedback specific to different components of the website (e.g., resource room, goal setting, etc.), or provide general feedback for the website as a whole. There was space given for qualitative prose if the participant wished to add comments or suggestions related to the program. The feedback section was made accessible for participants to choose to opt-in to fill out, but was not be a required part of the intervention.

**Usage Tracking Data.** The prescribed and actual frequency of use of the site and the modules within it should be tracked (Proudfoot et al., 2011). Key indicators for the process evaluation included: (1) Number of logins, (2) Total amount of time spent on website, (3) Number of components (modules) accessed, (4) Time spent on each component, (5) Traffic, and (6) Attrition. Regarding attrition, demographic information was obtained from those participants who drop out so systematic attrition could be ruled out or verified.



**Demographic Information.** Demographic information was obtained from all participants to assess the extent to which the sample represented the target population of interest and to determine the generalizability of the findings. Furthermore, demographic information informed the researchers of the readiness of the site for replication to other military posts. The demographic information was obtained from all participants as part of the intervention, in which case there was not a need to reassess for demographic information as part of the process evaluation. Key demographic factors that were obtained include age, gender, education level, current position (credentials), years of experience in their field, and trauma training (yes/no). Additional factors of interest included personal experience with trauma and military status.

### **Procedure and Design**

The first SupportNet staff report and process evaluation questionnaire was emailed to the individual SupportNet staff members in December, 2012. The second SupportNet staff report and process evaluation questionnaire was sent out a second time in September, 2013.

A delayed treatment paradigm was used to deliver the SupportNet intervention to three experimental groups of participants. In this way, the initial control group of participants became the experimental group in the second trial. For each trial of the intervention, the participants in the experimental group received the online comprehensive questionnaire at specified time periods. The timing of data collection was proposed to occur at three time periods for each experimental group. The first occurred prior to starting the intervention. The second was delivered to participants at the termination of the intervention, and this was considered part of the outcome evaluation. Lastly, the participants were given the questionnaire at two-month follow-up after intervention completion; however, results of the two-month follow-up were not incorporated into the current evaluation.

## **Outcome evaluation**

Outcome evaluation involved use of statistical methods to determine treatment effectiveness on the target group. Quantitative outcome measures taken after the intervention allowed the current researchers to assess the extent to which the stakeholders change over time, presumably as a result of the intervention. In the SupportNet outcome evaluation, it was important to consider the design of the study, including a control group for comparison, random assignment, pre and post-tests, and adequate sample size. Attrition is a common problem with online interventions, so it was crucial to anticipate attrition when determining sample size and to maintain frequent contact with participants to keep them engaged (Chiu & Eysenback, 2010). Outcome measures assessed whether target goals have been achieved. Measures of STS and job burnout are discussed in the SupportNet proposal. Additionally, positive outcome measures are included, such as work engagement and coping self-efficacy.

### **Effectiveness**

In assessing effectiveness, researchers were expected to report routine outcome measurements, participants' adherence to the intervention, and information about the generalizability of intervention's effectiveness in a real world context (Proudfoot et al., 2011). Indices of an intervention's effectiveness include improvements in users' symptoms, behavior, functioning and quality of life (Proudfoot). As outlined in the proposal, the participants were measured on job burnout, STS, work engagement, coping self-efficacy, perceived stress, and perceived social support. In addition to these quantitative measures of effectiveness, qualitative methods may be necessary to enrich the information provided by the quantitative analyses. Proudfoot et al. urge



researchers to recognize additional complexities including participant preferences, selection biases, differential dropout rates, and the appropriate use of quantitative and qualitative methods.

### **Satisfaction**

Participants' satisfaction with various components and with the intervention as a whole was assessed via the online questionnaire described in the method section. This questionnaire was delivered after completion of the intervention as part of the outcome evaluation. In addition to Likert-type questions assessing satisfaction with the program, there were open-ended questions and space provided for participants to provide additional feedback. This qualitative information was to supplement the satisfaction ratings and provide more detailed feedback.

## **Results & Discussion**

The results of the process and outcome evaluation for the SupportNet project were conducted by use of quantitative and qualitative methods. Frequencies and descriptive statistics (mean, standard deviation, and range) were provided for the SupportNet staff process evaluation questionnaire, the SupportNet Satisfaction Inventory (SSI), each outcome measure, as well as metrics on SupportNet website usage and coaching.

### **Internal Process Evaluation**

Two internal process evaluations with the SupportNet staff were conducted within a year's time. The first evaluation was conducted in December 2012 and qualitative and quantitative responses were received from four (57%) team members (see Appendix B). The second evaluation was conducted after the start of the SupportNet RCT in September 2013. The subsequent evaluation garnered quantitative responses from 10 (90.1%) team members. One

team member did not fill out the open-ended responses form; therefore, qualitative responses were collected from nine members (81.81%) of the SupportNet staff (see Appendix C).

Descriptive statistics of items on the internal process evaluation questionnaire from Time 1 and Time 2 are depicted on Table 1 below. Agreement with responses increased from the first to second evaluation for all items except for item numbers 2, 5, and 9. There was less than a .2 decrease in agreement for items number 5 and 9. The largest decrease in agreement was shown for number 2 (Time 1:  $M = 5.2$ ,  $SD = 1.3$ ; Time 2:  $M = 4.89$ ,  $SD = 1.27$ ), indicating that team members did not have as high agreement regarding being provided the proper resources to carry out their respective jobs. It should be noted that even the largest decrease in agreement was less than a .5 mean difference, and that this decrease may be reflective of the fact that the response rate for the second evaluation was double the amount of the first evaluation.

Table 1

*Descriptive Statistics for SupportNet internal process evaluation questionnaire.*

Question	<u>M</u>		<u>SD</u>		<u>Range</u>	
	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
1. The SupportNet project will reach its goals.	5.4	5.67	.55	.5	1	1
2. I have been given the proper resources to complete my tasks on the project.	5.2	4.89	1.3	1.27	3	3
3. I believe everyone knows his/her own specific duties who work on the project.	4.8	5.44	1.79	.53	4	1
4. Everyone is accomplishing their duties who work on the SupportNet project.	5	5.67	1.73	.5	4	1
5. I am accomplishing my responsibilities pertaining to the SupportNet project.	5.8	5.78	.45	.44	1	1
6. I have encountered few barriers in	3.4	3.67	1.34	1.41	3	4

reference to the SupportNet project.

7. I believe that my roles on the SupportNet project are important.	5.6	5.67	.55	.71	1	2
8. I believe that I am responsive to suggestions from other team members.	5.4	5.56	.89	.73	2	2
9. I listen to input from my superiors and my peers.	5.8	5.67	.45	.5	1	1
10. I believe that my input is valuable.	5.25	5.67	.83	.5	2	1

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*Note.* T1 = Time 1, T2 = Time 2. All mean scores are based on a 6-point Likert-type scale with higher numbers indicating greater agreement (1= *Strongly Disagree* to 6 = *Strongly Agree*).

A long-table approach (Krueger & Casey, 2000) was employed for analyzing the qualitative open-ended process evaluation responses, which entailed taking each qualitative response for every individual and then comparing respective items, side-by-side, to analyze similarities and extract themes. Results from both evaluations illustrated that team members appeared to be in agreement of the over-arching goals of the SupportNet project; however, in the second process evaluation, team members also cited goals that seemed consistent with their respective roles on the project (i.e., “development of an intervention for burnout and STS” for member of the SupportNet intervention development group). Regardless of the varied responses regarding project goals, responses illustrated the presence of strong group self-efficacy and an increase in team cohesion, despite different teams from different areas of expertise. SupportNet team members were in full-agreement of the primary group to be affected or impacted by the outcome of the SupportNet project. Team members were unanimous in their belief that the SupportNet project would reach its goals, with a majority of respondents citing comments related to the quality of team as being a reason for their confidence in both Time 1 and Time 2.



Recommended improvements to the SupportNet project in the first evaluation by staff members included comments regarding the need for improved communication amongst team members, which was not a theme present during the second evaluation. Instead, the majority of team members cited the need for more resources to better the intervention, such as time ( $n = 2$ ), money ( $n = 3$ ), and technology ( $n = 2$ ).

The majority of challenges cited were consistent across both evaluations, with barriers related to the lack of military support and changes as a result of the project development process being prevalent. Another barrier mentioned during the second evaluation was the lack of resources provided, such as time constraints being an obstacle encountered while working on the project.

### **SupportNet Participant Characteristics**

Military mental health providers randomized into the SupportNet RCT were aged 29-80 ( $M = 49.43$ ,  $SD = 12.38$ ). For military status, 18 providers indicated being active duty (30%), one affirmed being in the reserves or national guard (1.7%), eight indicated being retired or former military (13.3%), 32 stated having no military service (53.3%), and one provider did not provide their military status. Forty-two providers were female (70%), and 18 were male (30%). Highest education attainment differed across providers, with 16 (26.7%) providers having a master's degree, 14 (23.3%) having post-master's educational work, and 30 (50%) having a doctorate or professional degree. Forty-seven providers (78.3%) indicated being in a committed relationship (i.e., are married, or have a domestic partner), 13 providers (21.7%) indicated being single. The sample of providers included 13 clinical psychologists (21.7%), 17 counselors or psychotherapists (28.3%), three marriage and family therapists (5%), four medical doctors

(6.7%), four psychiatrists (6.7%), one physician assistant (1.7%) and 9 social workers (15%). Nine providers (15%) did not report their primary professional role.

### SupportNet Process Evaluation

In the RCT phase of the project, the SupportNet staff was responsive and adaptive to change the focus of the intervention as a function of the results of the prevalence study measuring burnout and STS, as well as the instrument scores received from the pre-intervention comprehensive questionnaire. Additionally, the scope of participants was expanded to include off-post providers.

Descriptive statistics for the SupportNet website usage tracking and effect sizes are depicted on Table 2. Results of an independent samples t-test found a statistically significant difference between all usage measures for participants who were coached and un-coached. Participants who received coaching showed significantly higher usage metrics overall.

Table 2

Usage Descriptive Statistic and Cohen’s *d* for Coached (*n* = 11) and Un-Coached (*n* = 10) Participants

Usage	<i>M</i>	<i>SD</i>	Min	Max	Cohen’s <i>d</i>
Number of Logins**	10.62	7.23	2	25	.20
Coaching	16.73	3.82	11	25	
No Coaching	3.9	2.02	2	9	
Duration of Usage**	5712.75	9746.76	187.81	30487.81	1.26
Coaching	10626.70	11578.29	251.70	30487.81	
No Coaching	307.42	424.9	22.46	935.07	
Number of Pages Visited**	187.81	147.38	29	562	2.26
Coaching	291.64	132.86	143	562	

No Coaching	73.6	31.4	29	139
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*Note.* \*\* denotes statistical significant difference between groups at  $p < .01$  level.

A proportion of participants in the RCT of SupportNet completed the SupportNet Satisfaction Inventory (SSI), which was included with the post-intervention outcome measures. Fourteen participants completed the SSI. A reliability analysis conducted on the scale garnered a Cronbach's alpha of .93, indicating strong internal consistency among the items. Total SSI scores could range from 12 to 84. The minimum total SSI score was 23 and the maximum was 75. Individual and total descriptive statistics for items on the SSI are illustrated on Table 3.

Table 3

*SupportNet Satisfaction Inventory Descriptive Statistics (n = 14)*

Question	<i>M</i>	<i>SD</i>	Min	Max
1. Overall, I felt satisfied with the SupportNet system.	5.00	1.41	2.00	7.00
2. The SupportNet system met my expectations.	4.71	1.90	1.00	7.00
3. I found the SupportNet system easy to use.	5.07	1.82	1.00	7.00
4. Overall, I found the site engaging.	5.07	1.27	2.00	7.00
5. The SupportNet system helped me to build or improve my professional relationships.	3.57	1.60	1.00	7.00
6. The SupportNet system required too much of my time.*	3.79	1.53	1.00	7.00
7. Using the SupportNet system improved my confidence in my ability to cope with work stress.	4.43	1.28	2.00	7.00
8. I felt the coach understood me.	5.21	2.78	1.00	7.00
9. I felt the coach and I had a respectful relationship.	5.29	2.81	1.00	7.00
10. The coach and I worked on what I wanted to work on.	5.29	2.81	1.00	7.00
11. I felt the coach and I had a good connection.	4.86	2.98	1.00	7.00
12. Overall, the coaching was helpful.	4.79	2.94	1.00	7.00

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**Total Scale Score**56.86 21.66 23.00 75.00

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*Note.* All mean scores are based on a 7-point Likert-type scale with higher numbers indicating greater agreement (1= *Strongly Disagree* to 7 = *Strongly Agree*)

Individual item statistics indicated neither agreement nor disagreement ( $n = 4$ ) to somewhat agreement ( $n = 5$ ) for the majority of items. The items with the lowest means were item number 5 and 6, which indicated participants generally somewhat disagreed that the SupportNet website improved their professional relationships and required too much of their time. The three items with highest agreement were related to coaching, which is particularly notable, because the sample included four participants that did not receive coaching and subsequently expressed disagreement with the coaching statements.

Seven participants, out of the 14 who filled out the post-intervention comprehensive questionnaire provided responses to the open-ended questions attached at the end of the SSI (see Appendix E). When inquired about the ways SupportNet website was useful, the usability of the website, enhanced self-care, resources, and coaching were prevalent themes extracted from responses. One participant remarked that the intervention was “easy to use,” and another mentioned that while they did not need to use the resources provided by the intervention, they found the “therapeutic (sic) alliance” between them and the coach as the “number one thing” they found useful. In regards to enhanced self-care, one participant remarked that “the site was very useful in motivating” them to work towards “a better life balance.”

Four providers provided suggestions for how the SupportNet website could be improved. Themes for responses included the following: usability, addressing technical issues, and resources/content. In regards to usability, one participant remarked that they were unable to “figure out how to use it (the website), how to network” and they mentioned being unsure

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whether they were to be contacted by a SupportNet coach. It should be mentioned that this participant was in the treatment-control group, or Trial Group C, so they did not receive access to coaching. Another participant cited the technical issues they encountered while using the site and specifically mentioned how they were unable to “successfully printout from various computers the life balance wheel” and “had to reenter data several times on the life balance wheel, as it (data) was somehow lost, after saving it.” In regards to resources and content, one participant stated their lack of need for the resources and content provided by the SupportNet website, whereas another participant voiced their initial excitement with the possibility of accessing articles and resources in the resource room, but then cited their disappointment with being unable to access entire articles, as they were hoping to “reference the tools...being utilized.”

Responses to what ways coaching was helpful were largely positive. Themes extracted from responses included support, listening/human interaction, helpfulness for goal attainment and coaching as being informative. The listening and human interaction component was the most cited among participants ( $n = 3$ ). One provider stated there was “no substitute for accurate empathic listening” and another participant mentioned how they “enjoyed talking” with their coach. In regards to coaching being informational, one participant cited “the coaching was outstanding” a described learning “a lot” from their SupportNet coach. In relation to the themes of goal attainment and support, one provider cited that their coach “was very supportive, helpful, and motivational in assisting” them “toward achieving the goals” they set for themselves. Another provider stated that their coach “checking in each week was helpful” in keeping them working toward their goal. Also worth mentioning is that no participants provided any suggestions for how coaching could be improved.

When asked about what important things were missing from the SupportNet website, participants mentioned an improved contact area, articles and actual resources that could be applied on their own. When asked about the part of the website they found most helpful, participants varied in their responses (See Appendix E). Only four components were referenced in responses. The greatest agreement was shown for the life-balance wheel ( $n = 4$ ), followed by the goal-setting component ( $n = 2$ ). Both the resource room ( $n = 1$ ) and self-assessment ( $n = 1$ ) were also modules mentioned as being the most helpful part of the website. Responses to what about the website was disliked by participants reiterated themes from the question regarding improvements, with technical issues and usability, or intuitiveness of the website design being prevalent themes. One participant mentioned their dislike of “computers in general,” citing their lack of interest in using a computer to access the intervention at home after being on a computer all day for work. Another participant stated disliking the “social support area” or networking component, stating they were uninterested in the component due to its similarity to *Facebook*.

Supplemental quantitative items assessing participants’ perceptions of SupportNet modules and website were included. Descriptive statistics were produced for each of these items (see Appendix F).

### SupportNet Outcome Evaluation

Correlational analyses were used to illustrate associations between pre-intervention SupportNet outcome measures. Results are displayed on Table 4.

Table 4  
*Pre-Intervention Outcome Measure Correlation Matrix (n = 60)*

	1	2	3	4	5	6
1. OLBI	–	-.32**	.72**	-.79**	-.59**	-.38**
2. WSBSE		–	-.44**	.29*	.43**	.05

3. STSS	–	-.47**	-.70**	-.23*
4. STSES		–	.52**	.35**
5. UWES			–	.27*
6. Readiness				–

*Note:* OLBI = Oldenburg Burnout Inventory, WSBSE = Work Stress Burnout Management Self-Efficacy, STSS = Secondary Traumatic Stress Scale, STSES = Secondary Trauma Self-Efficacy Scale, UWES = Utrecht Work Engagement Scale. \*\* indicates  $p < .01$ . \* indicates  $p < .05$ .

Results of the correlational analyses for the pre-intervention outcome measures illustrated significant correlations between burnout, STS, self-efficacy, and work engagement that were consistent with the theoretical objectives of the SupportNet intervention. Subsequent correlational analyses were conducted with the same measures post-intervention. Results of this analysis are shown on Table 5. These results indicated that the positive association between burnout and STS, as well as the inverse association between burnout and work engagement remained significant post-intervention, but no significant associations were found for burnout and WSBSE, and STS and STSE, which were results contrary to the theoretical objectives of the SupportNet. While results were not significant, it is important to note that the sample size in the subsequent correlational analysis was remarkably smaller ( $n = 14$ ) than the pre-intervention analysis sample ( $n = 60$ ) and thus, statistical power for the second correlational analysis may have been inhibited.

Table 5  
*SupportNet Post-Intervention Outcome Measure Correlation Matrix (n = 14)*

	1	2	3	4	5	6
1. OLBI	–	-.19	.71**	-.25	-.61*	-.10
2. WSBSE		–	.18	.86**	.07	.26
3. STSS			–	-.01	-.30	-.16
4. STSES				–	.08	.18
5. UWES					–	.12
6. Readiness						–

Note: \*\* indicates  $p < .01$ . \* indicates  $p < .05$ .

In order to highlight relationships between post-intervention SupportNet outcomes, usage tracking measures, and exposure to coaching, another correlational analysis was conducted. The results of the analysis are illustrated on Table 6.

The correlational analysis showed a strong association between SSI scores, number of SupportNet pages accessed, number of logins to the SupportNet website, and coaching. This finding illustrated use of the SupportNet website and exposure to coaching was positively associated with satisfaction, meaning those who used the intervention more, were likely to show higher satisfaction with the intervention. Additionally, a strong inverse correlation was found between burnout scores, logins, and coaching.

Table 6  
*SupportNet Post-Intervention Outcome Measure Correlation Matrix (n = 11)*

	1	2	3	4	5	6	7	8	9	10
1. OLBI	–	-.04	.71*	-.06	-.65*	-.55	-.55	-.64*	-.47	-.68*
2. WSBSE		–	.43	.79**	.14	.34	-.20	-.04	-.56	.21
3. STSS			–	.25	-.25	-.21	-.43	-.45	-.42	-.35
4. STSES				–	.21	.03	-.29	-.21	-.62*	-.10
5. UWES					–	.31	.05	.25	.45	.50
6. SSI						–	.66*	.88**	.21	.95**
7. # Pages							–	.91**	.52	.61*
8. # Logins								–	.48	.86**
9. # Mins									–	.43
10.Coaching										–

Note: SSI = SupportNet Satisfaction Inventory, # Page = Number of SupportNet Pages Visited, # Logins = Number of Logins to the SupportNet website, # Mins = Number of minutes logged onto SupportNet website. \*\* indicates  $p < .01$ . \* indicates  $p < .05$ .

As part of the outcome evaluation, paired sample t-tests were conducted on outcome measures to determine whether there were statistically significant differences seen from pre- to post-intervention. Results of the analysis with effect size are displayed on Table 7 below. Results

illustrated no statistically significant differences between pre- and post-intervention outcomes; however, because the small sample size, observations of the means were deemed more appropriate in determining whether there were changes seen from before and after use of the intervention. There was a general decrease observed from pre- to post-intervention in means for burnout scores and STS, as well as an increase in WSBSE, STSES and eHealth readiness. Aside from the increase seen in eHealth readiness, all of these trends were consistent with the outcome objectives set forth by the SupportNet team. The only measure that did not display any change was work engagement, which showed a mean decrease of .13.

Table 7  
*Paired Sample t-tests and Descriptive Statistics for Intervention Outcome Measures*

Usage	<i>M</i>	<i>SD</i>	<i>n</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>Cohen's d</i>
OLBI			13	1.90	12.00	.08	.47
Pre-	41.38	8.17					
Post-	35.92	9.50					
WSBSE			15	-1.83	14.00	.09	.47
Pre-	46.53	5.76					
Post-	48.60	5.42					
STSS			14	1.56	13.00	.14	.37
Pre-	36.93	12.36					
Post-	33.00	9.47					
STSES			15	-1.54	14.00	.15	-.59
Pre-	40.87	4.17					
Post-	42.13	3.91					
UWES			15	.14	14.00	.89	.08
Pre-	36.40	3.92					

Post- Readiness	36.27	5.05	15	-.56	14.00	.59	.14
Pre- Post-	30.47	6.08					
	31.33	8.09					

\*\* indicates  $p < .01$ . \* indicates  $p < .05$ .

Independent sample  $t$ -tests were conducted comparing participants who received SupportNet coaching versus those who did not receive coaching. No statistically significant differences were observed for any outcome measures, aside from the SSI,  $t(12) = -11.55, p < .001$ , which indicated that participants who received coaching had significantly higher satisfaction than those who did not. Descriptive statistics and effect size for each of the post-intervention outcomes by coaching is illustrated on Table 8.

Table 8

*Independent Samples t-test and Descriptive Statistics for Post Intervention Outcomes by Coaching*

Usage	<i>M</i>	<i>SD</i>	Min	Max	Cohen's <i>d</i>	<i>n</i>
OLBI					-.72	
Coaching	33.67	7.05	25.00	48.00		9
No Coaching	40.60	11.61	35.00	53.00		5
WSBSE					-.21	
Coaching	48.20	5.37	41.00	55.00		10
No Coaching	49.40	6.07	40.00	53.00		5
STSS					.15	
Coaching	33.80	9.68	19.00	48.00		10
No Coaching	32.40	9.21	28.00	43.00		5
STSES					-.70	
Coaching	41.20	3.46	37.00	47.00		10

No Coaching	44.00	4.47	37.00	46.00	5
UWES					.51
Coaching	37.10	5.36	32.00	45.00	10
No Coaching	34.60	4.39	28.00	38.00	5
SSI**					7.99
Coaching	69.50	7.29	50.00	75.00	10
No Coaching	25.25	2.87	23.00	29.00	4

*Note.* \*\* indicates  $p < .01$ .

Despite the lack of statistically significant differences seen with other outcomes, observations of the means showed that those who were coached showed less burnout, as well as higher STSES and work engagement. No remarkable differences in means were shown for STS and WSBSE; however, this *t*-test was conducted with small, uneven groups, thereby affecting the statistical power of the analysis. The following section will discuss the above stated results in relation to the evaluation questions.

### Summary and Conclusions

The results presented in the previous section illustrated the data used to inform the process and outcome evaluation document. The following section will briefly summarize the results while weaving together the various pieces of data with the appropriate evaluation questions to assess the process and outcome of the SupportNet intervention.

**Dose delivered.** Technical difficulties aside, all intended SupportNet intervention components were implemented according to plan. While delivery methods used included telephone audio, email, and the social networking module, a video modality was not used.

**Dose received.** Results of the process evaluation indicated that individuals who engaged the most with the intervention and received coaching ( $M = 69.50$ ,  $SD = 7.29$ ) showed higher



satisfaction with the intervention overall. Although satisfaction was high among those who engaged the most with the intervention, nonuse attrition for the RCT was an issue, as 60 providers were randomized into one of three trial groups and only 21 (35%) actually logged onto the website for 20 minutes or longer. Dropout attrition was also an issue, as only 15 (25%) participants completed the post-intervention comprehensive questionnaire. While SupportNet coaching sessions seemed to enhance adherence to the intervention, of the participants in Trial Groups A and B ( $n = 39$ ) given access to coaching; only 11 actually participated in the SupportNet coaching protocol.

In regards to usefulness of the intervention, participants cited usefulness (and lack thereof) of different modules, but varied in their responses. Participants seemed to enjoy the life-balance wheel and the goal-setting modules. Overall, the theme of enhanced self-care seemed to be prevalent in regards to the usefulness of the website. Those who received coaching cited their satisfaction with the coaching protocol.

**Implementation.** Aside from being unable to conduct impact evaluations, use video as a channel for delivery, the shift of focus of the intervention from STS to burnout, and the inclusion of off-base providers, the SupportNet intervention was implemented as planned. In regards to the use of theory, results from the internal process evaluation indicated that the underlying theory of Social Cognitive Theory was a prominent fixture in the project objectives and the development of the intervention. Some team members specifically cited their belief that use of empirically-based theory was a major strength of the SupportNet project, while others also stated the use of theory as a reason that the project would meet its goals. Thus, the SupportNet intervention was shown to be implemented consistently with the underlying theory of Social Cognitive Theory.



**Fidelity to treatment.** From a Social Cognitive Theory perspective, the extent to which the intervention improved military behavioral health providers' perceived efficacy to cope with the demands of their jobs and utilize personal professional resources effectively represented the fidelity to treatment for the SupportNet project. In the end, while there was not statistically significant different burnout, WSBSE, STS, and STSE scores from pre- to post-intervention (see Table 7) there were trends in the data in the directionality hypothesized for the majority of outcomes, which was in accordance with Social Cognitive Theory. It was expected the intervention would decrease symptoms of burnout and STS, while increasing, WSBSE, and STSE. The only measure that did not show a substantial increase or decrease was work engagement; however, descriptive statistics for work engagement by coaching exposure indicated that those who received coaching showed a higher work engagement (see Table 8).

Results of the SSI indicated that the majority of participants neither agreed nor disagreed with the statement that the SupportNet system helped to improve their professional relationships, but largely somewhat agreed with the statement that the SupportNet system improved their confidence in their ability to cope with work stress (see Table 3). Additionally, results of the SupportNet staff process evaluation questionnaire indicated that the majority of the staff agreed that the project would reach its goals (see Table 1). Taken together, these results illustrated the current project showed adequate fidelity to treatment.

**Reach & Recruitment.** The SupportNet intervention used a convenience sample recruited through cold calls made to military mental health providers across the nation and through research solicitations posted on professional *Listservs*. Participants were required to be mental health providers with at least one military trauma client currently on their caseload. As the SupportNet team planned, 60 participants were included in the RCT; however, the response



rate for the pre-intervention comprehensive questionnaire that was used to determine eligibility for inclusion into the study was smaller than expected. As a result, the cut-off scores for burnout were adjusted by the SupportNet team in order to allow for the minimum number of people to participate in the RCT. The burnout cut-off score for inclusion was a scaled score of 2 (out of a possible 5). While 60 providers were randomized into trial groups, it is unclear whether those who were included were actually in risk of burnout and thus, a part of the SupportNet intervention's target population.

**Context.** Given the demographics of the target population trying to be helped, the project faced the challenge of trying to engage those who were at risk of burnout due to higher job demands and lower resources through an intervention that required a time commitment. It is possible that participants did not engage with the SupportNet intervention as a function of their level of burnout.

Results of the internal process evaluations illustrated the barriers faced by the project as the result of weak support from military leaders. Given that behavioral health in the military is process-oriented, it is likely that lack of support from key military stakeholders was an impediment to the recruitment of behavioral health providers on base at Fort Carson.

The project team began recruitment for the SupportNet intervention and was readying the final RCT in October 2013, all of which coincided with the government shutdown that occurred from October 1<sup>st</sup> to October 16<sup>th</sup>, 2013. The shutdown resulted in government employees across the nation being furloughed for two weeks. Since the project itself was funded by the DoD, the government furlough likely affected SupportNet through contract delays and limiting recruitment of military behavioral health providers who work for the military.

**Outcome evaluation.** Pre-intervention outcomes correlated with each other in accordance with the project's hypotheses, as burnout was positively correlated with STS, and inversely correlated with WSBSE, STSES, and work engagement. Analyses conducted with post-intervention outcomes were likely affected by the small sample size. Fewer correlations were shown among the post-intervention outcomes, as the burnout measure was only positively correlated with STS and negatively correlated with work engagement, but showed no significant correlations with either self-efficacy outcome measure. Results of a paired sample t-test indicated no statistically significant differences were seen among the outcomes from pre- to post-intervention. However, observation of the descriptive statistics indicated that all outcomes, except for work engagement, trended in their expected directions and calculated Cohen's *d* effect sizes ranged from medium to large for all outcomes, except for work engagement.

As noted above, outcomes were likely affected by the small sample size at post-intervention, in addition to the low inclusionary cut-off for the burnout measure. While outcomes of the SupportNet project did not garner the effects expected, these initial results highlight the potential efficacy of the intervention in the future.

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## Appendix A

### SupportNet Staff Process Evaluation Questionnaire

Please indicate your response by highlighting one of the choices below each question.

1. The SupportNet project will reach its goals?

Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree

2. I have been given the proper resources to complete my tasks on the SupportNet project.

Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree

3. I believe everyone knows their specific duties who work on the SupportNet project.

Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree

4. Everyone is accomplishing their duties who work on the SupportNet project.

Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree

---

- 
5. I am accomplishing my responsibilities pertaining to the SupportNet project.  
Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree
6. I have encountered few barriers in reference to the SupportNet project.  
Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree
7. I believe that my roles on the project are important.  
Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree
8. I believe that I am responsive to suggestions from other team members.  
Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree
9. I listen to input from my superiors and my peers.  
Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree
10. I believe that my input is valuable.  
Strongly Disagree    Moderately Disagree    Slightly Disagree    Slightly Agree    Moderately Agree    Strongly Agree

### SupportNet Staff Process Evaluation Open-Ended Questions

The following questions are part of the ongoing internal process evaluation for the Trauma, Health, and Hazards Center SupportNet project. Please answer each question honestly and to the

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best of your ability or to the best of your knowledge. Please be as complete as you can in your explanations. Your answers are confidential and will only be shared with the evaluation team which is independent of the SupportNet team. Individual answers will be consolidated statistically and reported to the SupportNet team. The purpose of these questions is to detail the working of the SupportNet team and to understand what roles are present and how each member views the current project and its execution. Please do not discuss this questionnaire with any of your peers until all data has been collected.

**What are the goals of the SupportNet project?**

**What primary and secondary groups will be affected/impacted by the outcome of the SupportNet project? How?**

**What do you see to be the major strengths of the SupportNet project (weakness)?**

**Do you think that the SupportNet project will reach its goals? Why or why not?**

**How would you improve the SupportNet project?**

**What barriers have been encountered in respect to the SupportNet project so far?**

**What are your roles on the SupportNet project (Primary and secondary)?**

**Who works with you on the SupportNet project?**

**What are their roles?**

**What information was not addressed within this questionnaire that should have been?**

### **Demographics information**

**Please indicate your selection using the Word highlighter function.**

**Which category below describes your age?**

18-20

21-29

30-39

40-49

50-59

60-69

70 or older

**Gender**

---

Male  
Female

**Which of the following best describes your current occupation (role)?**

Case Manager  
Counselor  
General practitioner or medical doctor  
Medical Nurse  
Mental Health Nurse  
Other (please specify :)  
Project Director  
Psychiatrist  
Psychologist  
Research Assistant  
Research Director  
Social Worker

**Which best describes your race/ethnicity (may choose more than one)**

African-American/Black  
Asian or Pacific Islander  
European-American/White  
Latin-American/Hispanic  
Native American  
Other (please specify)

**What is the highest degree of education you have received?**

High School  
Associates degree  
Bachelor's degree  
Master's degree  
Doctorate

**What education or training have you received related to trauma treatment (check all that apply)?**

Completed at least one Trauma training course or workshop  
Completed multiple Trauma training courses and/or workshops (at least 3)  
Certified in Trauma treatment  
Master's degree with specialization in Trauma  
Doctorate degree with specialization in Trauma  
None

**Have you ever served in the military? If yes, in what capacity and for how long?**

**How long have you been working on the SupportNet project?**

**When will your work on the SupportNet project end?**

---

*Thank you for your time.*

## **Appendix B**

### Process Evaluation Open-Ended Responses (December 2012)

1. ***What are the goals of the SupportNet project?***
    - Reduce/prevent job burnout and STS in military mental health providers (4).
    - Develop intervention and test its effectiveness (4)
    - Research work engagement and secondary traumatic growth (1)
    - Summary: Team members appear to be in agreement and have a clear picture of the goals of the project.
  
  2. ***What primary and secondary groups will be affected/impacted by the outcome of the SupportNet project? How?***
    - Primary group impacted:
      - Military mental health providers (4)
    - How?
      - Outcome of project may assist this primary group by teaching them skills to prevent the development of STS and job burnout through increasing work/life balance, work engagement, social support, and coping self-efficacy. (1)
    - Secondary group impacted:
      - All mental health providers (2)
      - Family members and leadership working with MMHP (1)
      - Researchers will benefit from increased knowledge (1)
  
  3. ***What do you see as the major strengths and weaknesses of the SupportNet project?***
    - Strengths:
      - The people involved in the project / the team members! (3)
      - Knowledge, experience, expertise in various areas (3)
      - Research and Clinical expertise (2)
      - Solid empirical and theoretical basis for intervention (1)
    - Weaknesses:
      - Challenges of working with the military as an outsider, and resistance to the project by military leadership. (2)
-

- Organizational demands without necessary resources, and the organizational climate makes progress difficult. (1)
  - Omitted (1)
  - Summary: Team members agree that the team members bring different expertise to the project and collaborate with each other as a strength of the project. The challenges of working with the military are cited as a weakness.
4. ***Do you think the SN project will reach its goals? Why or why not?***
- Yes, because of contributions of the strong team of people involved. (2)
  - Yes, the team will meet many of its goals. We have a lot of goals we are striving for, and as part of the process of such an effort, some goals may need to be prioritized over others and some goals may be omitted because of conflict with higher priority goals. (1)
  - “I hope so.” (1)
  - Summary: All team members are in agreement (albeit a qualified agreement) that SupportNet will reach its goals.
5. ***How would you improve the SN project?***
- Communication among team members could be improved. (2)
  - Clarify specific tasks and deadlines, and work toward making the design elements clear and concrete. (1)
  - More time and money. (1)
  - It would be improved if we had stronger support from inside Fort Carson. (1)
6. ***What barriers have been encountered so far?***
- Lack of support from Fort Carson (3)
    - Leadership changes at Fort Carson which requires obtaining buy-in from each new leader. (1)
  - Organizational processes have delayed the project unnecessarily. (1)
  - Changes in team members. (1)
  - For the technology portion of the intervention, there was the change from using an outside company to using in-house resources.
  - Deciding which aspects of the intervention are necessary and which can be cut. (1)
7. ***What are your roles on the SN project? Primary and secondary?***
- All team members seemed clear as to his or her own role.
8. ***Who works with you? What are their roles?***
- \* Everyone (did not specify individuals or individual roles). (2)
  - \* Clearly specified roles of 5 key team members (1).
  - \* Clearly specified roles of those who worked with closely. (1)
-

- 
- \* Summary: May benefit from more interaction, more experience with all team members so understand everyone's role and their skill sets.

## Appendix C

### Process Evaluation #2 Open-Ended Responses (September 2013)

#### ***1. What are the goals of the SupportNet project?***

##### *Burnout and STS in MHP*

1. Learning (aka research) (7)
2. Development (aka clinical or tech) (4)
3. Treatment Delivery (5)

##### *Intervention*

1. Learning (aka research) (4)
2. Development (aka clinical or tech) (3)

3. Treatment Delivery (2)

*Work Engagement and Secondary Traumatic Growth*

1. Learning (aka research) (3)
2. Development (aka clinical or tech) (2)
3. Treatment Delivery (2)

Tone:

- Positive (0)
- Negative (0)
- Ambivalent (9)

Summary:

- Team members seem to be in agreement of certain themes more than others.
- Some team members' responses were consistent with goals of their respective team.

**2. *What primary and secondary groups will be affected/impacted by the outcome of the SupportNet project? How?***

Primary

- Mental Health Providers (4)
- Military Mental Health Providers (5)

How!?

- Increase work engagement (1)
- Reduce burnout (2)
- Increase self-efficacy (2)
- Facilitate social support (2)

Secondary

- Clients of MHPs (5)
- Mental Health Providers (2)
- UCCS Team (1)
- Anyone experiencing STS and burnout (1)
- Public Policy for Mental Health Providers (1)
- Researchers (1)
- Behavioral Health Organizations (1)
- Providers' Support System (1)
- Management (1)

Tone:

- Positive (1)
- Negative (0)

- Ambivalent (8)

### 3. *What do you see to be the major strengths of the SupportNet project (weakness)?*

#### Strengths:

- Team (17)
  - Teamwork (1)
  - Experience (2)
  - Skills (2)
  - Strong leadership (1)
  - Knowledge (1)
  - Quality (2)
  - Communication (1)
  - Organization (2)
- Intervention (6)
  - Empirically-based theory (2)
  - Empirically-based design (1)
  - Empirically-based development (1)
  - Technology (2)

#### Weaknesses

- None (2)
- Size (1)
- Cohesion (1)
- University organizational structure (1)
- Military support (4)
- Time (2)
- Singular theoretical orientation (1)

#### Tone:

- Positive (3)
- Negative (2)
- Ambivalent (4)

#### Summary:

- Empirically there are far more positive strengths; however, there are weaknesses that have been brought to light. Some people expressed their concerns that the weaknesses might be problematic.
- While there were clearly more strengths than weaknesses, weaknesses were primarily idiosyncratic (aside from military support)

**4. Do you think that the SupportNet project will reach its goals? Why or why not?**

- Yes!! (9)
  - Because the quality of the team (7)
    - Experience (1)
    - Motivation and hardwork (4)
  - Because quality of development (3)
    - Clear vision (1)
    - Detailed (1)
    - Empirically driven (1)
  - Because strong IT platform (1)
  - Because we will learn about burnout and STS (1)

Tone:

- Positive (7)
- Ambivalent (2)
- Negative (0)

Summary:

- Tone is far more positive here than in comparison with the other questions containing more ambivalent tones.

**5. How would you improve the SupportNet project?**

- None! (2)
- More resources to better the intervention (7)
  - Time (2)
  - Money (3)
  - Technology (1)
- Distractions (2)
  - Limit Jokes (1)
- Fewer Meetings (1)
- Incorporate key military into team (1)

Tone:

- Positive (2)
- Negative (0)
- Ambivalent (7)

**6. What barriers have been encountered in respect to the SupportNet project so far?**

- Nothing much! (1)
- External Sources (6)
  - Lack of Support from Fort Carson (3)
  - Contract Delays (1)

- IRB Responsiveness (1)
- Resources (4)
  - Time (2)
- Decision-making (1)
- Scheduling Meetings (1)
- Participant Recruitment (1)

Tone:

- Positive (2)
- Negative (3)
- Ambivalent (4)

**7. *What are your roles on the SupportNet project (Primary and secondary)?***

- Team members seemed clear as to his or her own role (8)
- Not answered (1)

**8. *Who works with you on the SupportNet project? What are their roles?***

- Perception of behavior on project is devoted to primary function (2)
- Perception of behavior on project is balanced between primary and secondary functions (3)
- Perception of behavior on project is general and spread across different functions and domains (2)
- Everyone (1)
- Not answered (1)

**9. *What information was not addressed within this questionnaire that should have been?***

- Growth from working on the project (1)

## Appendix D

### SupportNet Satisfaction Inventory

*A. Looking back on your experience using the SupportNet system and coaching sessions, please indicate the extent to which you agree or disagree with the following statements:*

---

Strongly Disagree   Disagree   Mildly Disagree   Mildly Agree   Agree   Strongly Agree   N/A

1. Overall, I felt satisfied with the SupportNet system.
2. The SupportNet system met my expectations.
3. I found SupportNet easy to use.
4. Overall, I found the site engaging.
5. SupportNet helped me to build or improve my professional relationships.
6. SupportNet required too much of my time.\*
7. Using SupportNet improved my confidence in my ability to cope with work stress.
8. I felt the coach understood me.
9. I felt the coach and I had a respectful relationship.
10. The coach and I worked on what I wanted to work on.
11. I felt the coach and I had a good connection.
12. Overall, the coaching was helpful.

---

*Note:* \*Reverse scored item

---

*B. Please answer the following open-ended questions with as much detail as possible:*

---

1. In what ways did you find the SupportNet website useful? How could the website be improved?
2. In what ways did you find the coaching helpful? How could the coaching be improved?

## **Appendix E**

### **SupportNet Satisfaction Inventory Qualitative Responses**

#### **1a. In what ways did you find the SupportNet website useful? (7)**

*Usability (1)*

- “Easy to use.”

*Enhanced Self-Care (4)*

- “Learned new techniques and to take time for myself.”
- “Good ideas in the Take 5 section to use during the day”
- “The site was very useful in motivating me to work on a better life balance...”

*Provided Resources (1)*

- “Self assessment, resources were good.”

*Coaching (2)*

- “During this coaching period, I had a death of a parent, I did find the coaching helpful and the strategies for avoiding burnout, I took it to my personal life and found it very helpful.”
- “I knew all the resources... did not need them. sorry. The theraeutoic (sic) alliance between the coach and I was the number one thing that provided assist to me.”

▪ Specific Website Modules Mentioned (4)

1. Resources/Resource Room (1)
2. Life Balance (1)
3. Self-Assessments (1)
4. Take-5 (1)

**1b. How could the website be improved? (4)**

*Usability (1)*

- “I could not figure out how to use it, how to network or if I was supposed to be contacted by a coach.”

*Address Technical Issues (1)*

- “My coach's profile picture was never displayed. I could not successfully printout from various computers the life balance wheel. I had to reenter data several times on the life balance wheel, as it was somehow lost, after saving it.”

*Resources/Content (2)*

- “I knew all the resources... did not need them.”
- “I was really excited about reading the articles and accessing those resources. However, all you could get from the program was the abstract. Overall, I found this very disappointing as I like to be able to reference the tools that are being utilized.”

*Unsure (1)*

**2a. In what ways did you find the coaching helpful? (7)**

*Supportive (2)*

- “Support.”

*Listening/Human Interaction (3)*

- “listening was the best.”
- “There is no substitute for accurate empathic listening.”
- “I enjoyed talking with \_\_\_\_ and discussing a few cases...”

*Helpful with Goal Attainment (2)*

- “My coach was very supportive, helpful, and motivational in assisting me toward achieving the goals I set for myself.”
- “Checking in each week was helpful in keeping me working toward my goal.”

*Informative (2)*

- “The coaching was outstanding and I learned a lot from my coach.”
- “Coaching was excellent, very useful to see\* the distance between thinking and doing.”

## **2b. How could the coaching be improved? (0)**

*No Suggestions Provided*

## **What important things did you feel were missing from the SupportNet website?**

- “maybe I am to (sic) old. But I am on a MHS comuter (sic) all day, why the hell would I want to go it when I get home?”
- “Perhaps a more improved contact area, i.e. a chat room, more uploaded pictures on the profiles of participants and coaches.”
- “I think it was adequate and a good starting point.”
- “Articles. Actual resources that I could apply on my own.”

## **Please tell us which part of the website you found the most helpful.**

- Life-Balance Wheel (4)
- Goal-Setting (2)
- Resource Room (1)
- Self-Assessment (1)

## **Please tell us what you most dislike about the website.**

- “It was not very intuitive, printing challenges, data loss.”
- “Locked \*out\* and resetti\*ng password not\*\* \*easy”
- “Adding/editing goals was not so easy.”
- “It’s not the website---its computers in general.”
- “Not clear cut what to do. I couldn’t initiate anything relevant for me. I was hoping it would be an intervention I could use since things have been getting worse but I was unable to figure it out.”
- “The social support area. I am not interested in that; it reminded me of facebook.

## Appendix F

### Descriptive Statistics for SupportNet Website Questions

Item	<i>M</i>	<i>SD</i>	Min	Max	<i>n</i>
1. I gained something positive from working on Goal Setting	3.77	1.24	1	5	13
2. I gained something positive from working on Self-Assessment.	4	1.12	1	5	13
3. I gained something positive from working on Resource Room	3.15	1.28	1	5	13
4. I gained something positive from working on Social Networking	2.54	.88	1	4	13
5. Goal Setting component was user friendly.	3.75	.87	2	5	13
6. Self-Assessment component was user friendly.	3.82	.87	2	5	13
7. Resource Room component was user friendly.	3.91	.83	2	5	13
8. Social Networking component was user friendly	4	.98	2	5	13
9. I believe that I am more able to deal with things in my life because of what I learned from the Goal Setting component.	3	.79	2	4	13
10. I believe that I am more able to deal with things in my life because of what I learned from the Self-Assessment component.	3.33	.78	2	4	13
10. I believe that I am more able to deal with things in my life because of what I learned from the Resource Room component.	3.08	.67	2	4	13
11. I believe that I am more able to deal with things in my life because of what I learned from the Social Networking component.	2.83	.72	2	4	13
12. I would recommend the Goal Setting to other BHPs.	3.58	.9	2	5	13
13. I would recommend the Self-Assessment component to other BHPs.	3.58	.9	2	5	13
14. I would recommend the SupportNet resource room component to other BHPs.	3.75	1.06	2	5	13

15. I would recommend the Social Networking component to other BHPs.	3.33	.89	2	5
16. The Goal Setting addressed many of my needs and concerns.	3.25	.97	2	5
17. The Self-Assessment component addressed many of my needs and concerns.	3.5	.9	2	5
18. The Resource Room component addressed many of my needs and concerns.	3	.95	1	4
19. The Social Networking component addressed many of my needs and concerns.	2.67	.78	1	4
20. I feel that my awareness of secondary traumatic stress has increased since I started using the SupportNet website.	4.71	1.38	2	7
21. I feel that my awareness of job burnout has increased since I started using the SupportNet website.	4.79	1.37	2	7
22. I feel that the quality of self-care activities has increased since I started using the SupportNet website.	5.14	1.35	3	7
23. I feel that the quality of social support around me has increased since I started using the SupportNet website.	4.29	1.44	2	7
24. I feel that I am more capable of coping with work stress than before I started using the SupportNet website.	4.43	1.22	2	7
25. I feel that I spend more time on self-care activities than before I started using the SupportNet website.	4.5	1.51	2	7

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*Note.* All mean scores are based on a 5-point Likert-type scale with higher numbers indicating greater agreement (1= *Strongly Disagree* to 5 = *Strongly Agree*). BHPs = Behavioral healthcare providers.

## Appendix 22



UNIVERSITY OF COLORADO AT COLORADO SPRINGS

# SupportNet

## *Fort Carson SupportNet Focus Group*

*July 12, 2012*

*Valerie Anderson, PsyD*

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UNIVERSITY OF COLORADO AT COLORADO SPRINGS

## Purpose and Agenda

- Review of the Literature related to Burnout and Secondary Traumatic Stress
- Review Proposed Support System Components
- Small Group Discussions
- Consolidation of Discussion Results
- Preparing for the Next Meeting





## Factors Affecting STS and Burnout

### *Personal and Social Factors*

Personal or Social Factor / Study	Effects	Support Mode
Therapist's personal, perhaps unresolved trauma history (Pearlman & MacJan, 1995) (Voss Horrell, Holohan, Didion, & Vance, 2011) (Linsley & Joseph, 2007)	<ul style="list-style-type: none"> <li>↑ STS risk</li> <li>↑ General distress</li> <li>↑ Posttraumatic growth</li> </ul>	Individual trauma treatment
Self-efficacy (Ortlepp & Friedman, 2002)	<ul style="list-style-type: none"> <li>↓ STS</li> </ul>	Internet-based intervention for building self-efficacy
Poor self-care and work/life balance (Killian, 2008) (Voss Horrell, Holohan, Didion, & Vance, 2011)	<ul style="list-style-type: none"> <li>↓ Work Engagement</li> <li>↓ Job Satisfaction</li> <li>↑ Job burnout</li> </ul>	Internet social support platform; individual coaching
Perceived personal and professional social support (Devilly, Wright, & Varker, 2009) (Voss Horrell, Holohan, Didion, & Vance, 2011); Peer consultation	<ul style="list-style-type: none"> <li>↓ Job burnout</li> <li>↓ STS</li> <li>↑ Self-efficacy</li> <li>↑ Work engagement</li> </ul>	Internet social support platform

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## Factors Affecting STS and Burnout

### *Organizational Factors*

Organizational Factor / Study	Effects	Support Mode
Supportive supervision; ability to debrief informally and process client's traumatic material (Killian, 2008) (Voss Horrell, Holohan, Didion, & Vance, 2011) (Linsley & Joseph, 2007)	<ul style="list-style-type: none"> <li>↑ Compassion Satisfaction</li> <li>↑ Posttraumatic growth</li> </ul>	Internet social support platform (professional) Management Dashboard
Caseload / Workload; (Craig & Sprang, 2010) (Voss Horrell, Holohan, Didion, & Vance, 2011) (Linsley & Joseph, 2007)	<ul style="list-style-type: none"> <li>↑ STS</li> <li>↑ Burnout</li> </ul>	Management Dashboard
Evidence Based Practices (Craig & Sprang, 2010) (Voss Horrell, Holohan, Didion, & Vance, 2011)	<ul style="list-style-type: none"> <li>↓ Burnout</li> <li>↓ Compassion fatigue</li> <li>↑ Compassion Satisfaction</li> </ul>	Training; Newsletter/Research Advisory
Professional (trauma) training (Craig & Sprang, 2010)	<ul style="list-style-type: none"> <li>↓ Compassion fatigue</li> <li>↓ Burnout</li> </ul>	Training; Newsletter/ Research Advisory
Percent of caseload with trauma cases; Balanced / diverse caseloads (Craig & Sprang, 2010) (Voss Horrell, Holohan, Didion, & Vance, 2011) (Ortlepp & Friedman, 2002)	<ul style="list-style-type: none"> <li>↑ Job burnout</li> <li>↑ STS</li> </ul>	Organizational
Safety and control; safe working environment (Devilly, Wright, & Varker, 2009)	<ul style="list-style-type: none"> <li>↓ Job satisfaction</li> <li>↑ General distress</li> </ul>	Organizational

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### **Proposed Support System**

*Internet-based support systems  
Improving social support, psycho-education, and building self-efficacy*



*Newsletter/Research Advisory  
Quarterly newsletter and monthly research advisories to address research on trauma treatments with links to articles or papers that address trauma treatment issues. The purpose of the advisories is to supplement ongoing training in evidence-based trauma treatment.*



*Trauma-Specific Training  
Trauma-specific trainings that are provided by the military will be listed on the internet-based social support platform. In addition, the SupportNet team will provide periodic training seminars featuring renowned experts in the field.*



*Management/Supervisor "Dashboard"  
The supervisory "dashboard" would be an on-line system to monitor the well-being of supervisees including self-care, case load, burnout and STS*



*Individual coaching  
Individual or team coaching will be provided to help providers meet their personal goals for self-care and worklife balance available in-person, online or via Telehealth technologies.*



*Individual trauma treatment  
Short-term, in-person and solution-focused treatment for individual trauma using evidence-based practices on an as-requested basis. Behavioral health issues outside of specific trauma treatment and urgent or emergent issues affecting safety referred to a network provider.*

### **Group Discussion Questions**

1. What types of programs are available to you to help you with professional growth or burnout?
  - How are they helpful?
  - What could be improved?
2. How do you establish and maintain professional relationships with your peers?

## Preparing for the next meeting (August 16, 2012)

- For discussion at the next meeting:

*Please put some thought into how the support system modules might be incorporated into your work environment*



## Schedule of Focus Group Meetings Thursday, August 16 at 09:30 Thursday, September 20 at 09:30



## Appendix 23

### Assessment

Date	Status	SS	SE	WE	STS	BO	PS	NOTES
	Red							
	Orange							
	Yellow							
	Green							
	Red							
	Orange							
	Yellow							
	Green							
	Red							
	Orange							
	Yellow							
	Green							
	Red							
	Orange							
	Yellow							
	Green							

SS –Social Support; SE – Self-Efficacy; WE – Work Engagement; STS – Secondary Traumatic Stress; BO – Burnout; PS – Perceived Stress

### Pre-Coaching Checklist – For Coach

Reviewed Assessment results

o \_\_\_\_\_ STS is significantly present – mark if present and see Appendix A & B (if score is in the RED area on pie chart—then STS is significantly present)

Refer to behavioral health services if STS is RED on pie chart (see Appendix C)

Goals of Coaching Intervention become centered around taking care of self (in addition to enhancing self-care and social support) by seeking help from a behavioral health care specialist

Scheduled first 60-minute coaching session to begin on: \_\_\_\_\_ (date) at \_\_\_\_\_ (time)

Encouraged participant to set up profile & review assessment results: explained that there would be a chance to explore the rest of the site and set up goals once coaching begins

Recommended computer access to the internet during first and second sessions

Verbal OK to contact client via:

Email: \_\_\_\_\_

Phone: \_\_\_\_\_

Text: \_\_\_\_\_

Coaches may find it helpful to review “Goals and Objectives of Coaching Plan” (Appendix D)

Coaching Session 1 – Enhancing Awareness

(Self-Awareness /Commitment)

Self-care is a skillful attitude that needs practice throughout the day ~ M. J. Mahoney

Questions / Strategies (to use during coaching session):

1. What do you see going on?
2. What would you do differently if nothing stopping you? / What's holding you back?
3. I can see that things [at work] are really difficult for you right now and yet you have still managed to \_\_\_\_\_. How have you done that?

Coach: Please check each box representing what you were able to address this session:

- Focused on rapport-building (LISTEN to “their story” especially if STS present)

It is imperative that the coach validates and normalizes the participant's experiences. Reframing their reactions as being an indication that they are a dedicated and compassionate [provider] may be necessary if they are experiencing guilt or shame about their thoughts, emotions, or behaviors (Meichenbaum, 2007)

- Introduced coaching model
- Reviewed Elements of Coaching
- “Recognizing the nature of your work with military trauma, this is a workplace intervention to minimize / prevent job burnout, secondary traumatic stress and to increase work engagement”
- Focus is on gaining awareness
- Help you feel more capable to handle work-related stressors
- Additional focus on the three S's (self-care, social support, self-efficacy)
- Improve self-care
  - Increase social support
- Here to help AND to confront you when necessary (coach analogy)
- Bottom Line: “You are in control and you are responsible for your own processes and outcomes” (see Appendix E-F)
- Reviewed assessment results with participant
- Invited participant to share their perceptions of the assessment results

- Focused on strengths
- Explored with participant their understanding of burnout
- Physical and mental exhaustion resulting from excessive, prolonged exposure to stress
- Explored with participant their understanding of STS (if applicable)
- Natural consequence of caring for traumatized individuals
- Stress associated with helping a traumatized individual
- Early identification is important
  
- Promoted specific self-care strategies for healthy lifestyle

Coaching Session 1 (continued):

- Explained how to navigate web application
- Highlighted assessments (self-monitoring)
- Highlighted connections (social support)
- Highlighted goal-setting
- Life Balance (links values to goals)
- Take-5 (self-care)
- Highlighted library resources
- EBTs (CPT, EMDR, PET)
- Life Balance (self-care, well-being, work home balance, goal setting)
- Health Status (self-efficacy, social support, work engagement)
- Stress Indicators (Job Burnout, Perceived Stress, STS)
- Clinician Toolkit (clinician, client, PTSD meds, neurobiology of PTSD)
  
- Referred participant to tech team if they requested additional support

Assessed current levels of self-care self-efficacy: “Reflecting on your current situation, on a scale of 1 (not at all confident) to 10 (100% confident), how confident are you that you can establish some self-care goal(s)?”

Low                    1   2        3        4        5        6        7        8        9        10        High

Assigned Homework

Profile: develop (if not already completed)

Explore web application – Instructional Video (if available), Profile, Assess (user will be provided an opportunity between session 2 and 3 to enter goals and connect with others)

Resources: Selected readings on Stress Indicators, Health Status, Life Balance Issues

Goals: complete the Life Balance Wheel - print a copy for your recs (see Appendix G)

Negotiated level of coach support and contact in between sessions (see Appendix H for log)

Scheduled Session 2 for \_\_\_\_\_ (date) at \_\_\_\_\_ (time)

Recommended computer access to the internet during first and second sessions

Coach To Do:

Complete Goal Survey – see Appendix I for Session 1-6 Goals

Document session start and end time

Session Notes:

Coaching Session 2 – Goals / Challenges

Goals for Success

“If you don’t know where you are going, you’ll end up someplace else.” ~ Yogi Berra

“It is not enough to take steps which may someday lead to a goal; each step must be itself a goal and a step likewise.”

~ Johann Wolfgang von Goethe

Coach To Do (preparation for Session 2):

- Review Life Balance Wheel Results and document below

Questions / Strategies:

1. What are your non-negotiable beliefs and values? How developed? When, where, challenged? (Kemp, 2005)
2. How would life be different for you if [target life balance area] were more balanced?
3. What would you do differently if nothing stopping you?

Coach: Please check each box representing what you were able to address this session:

- Supported participant process of identifying and utilizing specific self-care strategies (promoting healthy lifestyle)

Reviewed Homework (circle one) Completed: Yes No  
Partially

Profile: developed

Instructional Video (if available), Profile & Assess

Resources: Selected readings on Stress Indicators, Health Status & Life Balance

Goals: Complete the Life Balance Wheel (Appendix G)

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- Environment \_\_\_\_\_
- Relationships \_\_\_\_\_
- Fun \_\_\_\_\_
- Health/Fitness \_\_\_\_\_
- Growth/Learning \_\_\_\_\_
- Spirituality \_\_\_\_\_
- Career/Work \_\_\_\_\_
- Money/Finance \_\_\_\_\_

- Explored Life Balance strengths and impact areas
- Relationship to burnout (and STS)
- Relationship to self-care (boundaries)
- Relationship to social support (connecting with others)
- Role of values in influencing targeted life balance area and goals
  
- Facilitated participant choosing 1-2 life balance areas to focus on (values driven)

- Explored participant knowledge base and experience with setting achievable goals
- Re: Goal
- Emphasized starting with the end in mind
- How will the participant know that they have achieved this goal?
- Specific and measurable

Coaching Session 2 (continued):

- Re: Steps
  - 99% achievable
  - Reward progress along the way (incorporate into steps)
  - Emphasized importance of incorporating self-care
  - Encouraged incorporating social support (accountability partner)
  
  - Shared resources on web application to assist with goal development
  - Behavioral intentions
  - Resource Room – relevant sections on goal setting, self-care, social support
  
  - Encouraged participant to take steps toward developing a network of social support via Web Application Goal Connections
  
  - Assessed current level of self-care self-efficacy: ““Reflecting on your current situation, on a scale of 1 (not at all confident) to 10 (100% confident), how confident are you that you can establish some goal(s)?”
- |     |   |   |   |   |   |   |   |   |   |    |      |
|-----|---|---|---|---|---|---|---|---|---|----|------|
| Low | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | High |
|-----|---|---|---|---|---|---|---|---|---|----|------|
- Assigned Homework
  - Resources: read about goals and goal setting (if appropriate)
  - Goals: identify and enter online 1-2 goals for life balance domain of choice (include self-care and social support and identified accountability partner)
  - Connections: identify and establish online social support connections for goals
  - Action!!!
  
  - Scheduled Session 3 for \_\_\_\_\_ (date) at \_\_\_\_\_ (time).
  - Coach to Do:

- Complete Goal Survey – see Appendix I for Session 1-6 Goals
- Send an encouraging message to your participants this week
- Document session start and end time

Session Notes:

### Coaching Session 3 – Goals / Challenge

#### Overcoming Obstacles

“Obstacles are those frightful things you see when you take your eyes off your goals.”

~ Henry Ford

“Challenges are what make life interesting and overcoming them is what makes life meaningful.”

~ Joshua J. Marine

“Whether you think you can, or you think you can’t—you’re right.” ~ Henry Ford

“When everything seems to be going against you,

Remember that the airplane takes off against the wind.” ~ Henry Ford

#### Coach To Do (preparation for Session 3):

- Review participant’s goals and steps and print a copy for your records if desired
- Review participant’s connections
- Review and document any updates on assessments

#### Questions / Strategies:

1. Why did you become a behavioral health provider?

2. What would you do differently if nothing was stopping you?
3. Describe your most significant professional achievement to date. What made it significant?  
(Kelp, 2005)
4. How does self-care influence your ability to meet your life goals? What have been your most rewarding/difficult personal challenges?
5. How do you need to be thinking and perceiving differently to accomplish your goals? (Kemp, 2005)
6. How have you overcome past challenges?
7. How can you apply what you have learned about yourself when facing obstacles/challenges in the past to your current situation?

Coach: Please check each box representing what you were able to address this session:

- Reviewed Homework (circle one) Completed: Yes No  
Partially
- Resources: read about goals and goal setting (if appropriate)
- Goals: identify and enter online 1-2 goals for life balance domain of choice (include self-care and social support and identified accountability partner)
- Connections: identify and establish online social support connections for goals
- Action!!! How did it go???
- Explored with participant potential obstacles to achieving stated goal(s)
- “What obstacles do you see getting in the way of achieving your goals”
- Explored with participant strengths and successes when facing past challenges
- Supported participant in leveraging strengths to overcome obstacles
- Encouraged realistic expectations of self and others
- Challenged participant’s potential problematic core beliefs / cognitive distortions



Coaching Session 3 (continued)

- Facilitated development of strategies to promote goal attainment such as:
- Identification of obstacles and plan in place to overcome obstacles
- Obstacle(s) \_\_\_\_\_
- Plan \_\_\_\_\_
- Self-regulation techniques (monitor goal steps, evaluate goal progress, modify goal/steps)
- Reviewed role of three S's-social support, self-care, self-efficacy in overcoming obstacles and referred participant to Resource Room for more information
- Reminded client to “Celebrate your accomplishments!”
- Role of rewards
- Social posts (form of support)
- Supported the client in identifying their needs “How can I help/support you?”
- Assigned Homework
- Goals: practice self-regulation (monitor, evaluate, modify goals online)
- Connections: encourage others

- Resources: review relevant readings of choice
- Assess: revisit self-assessment (particularly perceived stress scale, if relevant)

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Assessed current level of self-care self-efficacy: ““Reflecting on your current situation, on a scale of 1 (not at all confident) to 10 (100% confident), how confident are you that you can achieve your goal(s)?”

Low                    1   2        3        4        5        6        7        8        9        10        High

Scheduled Session 4 for \_\_\_\_\_ (date) at \_\_\_\_\_ (time).

Coach To Do:

Complete Goal Survey – see Appendix I for Session 1-6 Goals

Document session start and end time

Document progress toward goals

Session Notes:

Coaching Session 4 – Action / Support

Self-Care

Knowing is not enough; we must apply. Willing is not enough; we must do.”

~ Johann Wolfgang von Goethe

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Coach To Do (preparation for Session 4):

- Review participant's goals and steps and print a copy for your records if desired
- Review participant's connections
- Review and document any updates on assessments

Questions / Strategies:

1. RE: Goals: What is influencing your successes? What is getting in the way of your being successful? What could get in the way?
2. How does self-care influence your ability to meet your life goals? What have been your most rewarding/difficult personal challenges?
3. How have you overcome past challenges?
4. How can you apply what you have learned about yourself when facing obstacles/challenges in the past to your current situation?
5. Describe how you (or others) know you are stressed (i.e., emotional, physical, and behavioral indicators).

Coach: (Reminder—session 4 content is reinforced in session 5)

Please check each box representing what you were able to address during these sessions:

- Reviewed Homework: (circle one) Completed: Yes No  
Partially
- Goals: practice self-regulation (monitor, evaluate, modify goals online)
- Connections: encourage others
- Resources: review relevant readings of choice
- Assess: revisit self-assessment (particularly perceived stress scale, if relevant)

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Encouraged participant to be aware of stress indicators and to practice daily self-care strategies

Self-monitor

Assessed: "On a scale of 1 (not at all) to 10 (completely) how aware of your stress level are you on a daily basis?" \_\_\_\_\_

Enhance awareness of emotional, physical, & behavioral indicators of stress

Stress Reduction Techniques

Take 5

practice mindfulness and acceptance

relaxation

meditation

visualization

journaling

#### Coaching Session 4 (continued)

Continue to encourage development of strategies to promote goal attainment such as:

Identification of obstacles and plan in place to overcome obstacles

Obstacle \_\_\_\_\_

Plan \_\_\_\_\_

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- Self-regulation techniques (monitor goal steps, evaluate goal progress, modify goal/steps)
  - Three S's-social support, self-care, self-efficacy
  - Praised participant for each step taken thus far
  - Assigned Homework (highly individualized at this point)
  - Self-monitor personal indicators of stress
  - Take 5: identify and implement Take 5 or other self-care strategy of choice
  - Goals: self-regulation (monitor, evaluate, modify goals)
  - Connections: encourage others
  - Assess: revisit Self-Assessment (particularly perceived stress scale, if relevant)
  -
- 

Assessed current level of self-care self-efficacy: “Reflecting on your current situation, on a scale of 1 (not at all confident) to 10 (100% confident), how confident are you that you can achieve your goal(s)?”

Low                    1   2        3        4        5        6        7        8        9        10        High

Scheduled Session 5 for \_\_\_\_\_ (date) at \_\_\_\_\_ (time).

Coach To Do:

Complete Goal Survey – see Appendix I for Session 1-6 Goals

Send an encouraging message to participant this week

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- Document session start and end time
- Document progress toward goal(s)

Session Notes:

Coaching Session 5 – Action / Support

Social Support

Knowing is not enough; we must apply. Willing is not enough; we must do.”

~ Johann Wolfgang von Goethe

Coach To Do (preparation for Session 5):

- Review participant’s goals and steps and print a copy for your records if desired
- Review participant’s connections
- Review and document any updates on assessments

Questions / Strategies:

1. RE: Goals: What is influencing your successes? What is getting in the way of your being successful? What could get in the way?
2. How can you apply what you have learned about yourself when facing obstacles/challenges in the past to your current situation?
3. How does self-care influence your ability to meet your life goals?

Coach: Please check each box representing what you were able to address during these sessions:

Partially Reviewed Homework: (circle one) Completed: Yes No

- Self-monitor personal indicators of stress
  - Take 5: identify and implement Take 5 or other self-care strategy of choice
  - Goals: self-regulation (monitor, evaluate, modify goals)
  - Connections: encourage others
  - Assess: revisit Self-Assessment (particularly perceived stress scale, if relevant)
  -
- 

- Emphasized importance of social support
- Encouraged participant to be aware of stress indicators and to practice daily self-care strategies
- Check-in re: Self-monitoring indicators of stress
- Check-in re: Use of Stress Reduction Techniques
- Take 5, mindfulness/acceptance, relaxation, mediation, visualization, journaling

Continue to encourage development of strategies to promote goal attainment such as:

- Identification of obstacles and plan in place to overcome obstacles
  - Obstacle \_\_\_\_\_
  - Plan \_\_\_\_\_
-

- Self-regulation techniques (monitor goal steps, evaluate goal progress, modify goal/steps)
- Three S's-social support, self-care, self-efficacy
- Praised participant for each step taken thus far

Coaching Session 5 (continued)

- Assigned Homework (highly individualized at this point)
- Assess: revisit relevant portions of self-assessment
- Take 5: continue Take 5 (or other) stress reduction strategy of choice
- Connections: continue encouraging others
- Reflect on your successes and what you have gained from this coaching process these past 6 weeks so we can discuss next time
- Goals: revisit Life Balance Wheel and print a copy for your records
- 

- Assessed current level of self-care self-efficacy: “Reflecting on your current situation, on a scale of 1 (not at all confident) to 10 (100% confident), how confident are you that you can achieve your goal(s)?”

Low                    1   2        3        4        5        6        7        8        9        10        High

- Scheduled Session 6 for \_\_\_\_\_ (date) at \_\_\_\_\_ (time).
- Coach To Do:
- Complete Goal Survey – see Appendix I for Session 1-6 Goals
- Document session start and end time

- 
- Document progress toward goals

Session Notes:

Coaching Session 6 – Empowerment  
Successes and Beyond

“If we are facing the right direction, all we have to do is keep on walking.”

~Zen Proverb

“...you have endless ability and unlimited potential, so make your move, start unleashing it and living your dream!!!”

~ Ricardo Housham

Coach To Do (preparation for Session 6):

- Review participant’s Goals and Steps and print a copy for your records if desired
- Review participant’s Connections
- Review and document any updates on Assessments
- Review and document any updates on Life Balance Wheel

Questions / Strategies:

1. What successes have you experienced in the past couple of months? What has changed? What will you take with you from this experience?
2. RE: Life Balance: What is different or what has changed? What needs to happen (or what will you do) to continue (or begin) moving in a forward direction? What obstacles do you see getting in the way? What is your plan for overcoming those obstacles?
3. What do you see as your next step(s)?

Coach: Please check each box representing what you were able to address this session:

Reviewed Homework: (circle one) Completed: Yes No  
Partially

Assess: revisit relevant portions of self-assessment

Take 5: continue Take 5 (or other) stress reduction strategy of choice

---

- Connections: continue encouraging others
  - Goals: revisit Life Balance Wheel and print a copy for your records
  - Reflect on your successes and what you have gained from this coaching process
  -
- 

- Reviewed Life Balance:
- Domain # 1 \_\_\_\_\_
- \_\_\_\_\_ (session 2 rating)    \_\_\_\_\_ (current rating) \*scale 1-10
- Domain # 2 \_\_\_\_\_
- \_\_\_\_\_ (session 2 rating)    \_\_\_\_\_ (current rating) \*scale 1-10
- Reviewed successes

#### Coaching Session 6 (continued)

- Encouraged participant to identify next steps
  - Provided participant opportunity to consider obstacles that could get in the way of longer-term goal attainment and encouraged follow through on plan
  - Discussed how to apply to other life domains
  - Encouraged participant to complete the Time 2 survey.
-

Informed participant that online platform will be available until May 2, 2014

Assessed level of self-care/self-efficacy: “Reflecting on your current situation, on a scale of 1 (not at all confident) to 10 (100% confident), how confident are you that you can make your self-care changes a long-term part of your lifestyle?”

Low                    1   2     3     4     5     6     7     8     9     10     High

Coach to Do:

Document session start and end time

Document progress toward goals

Complete Goal Survey – see Appendix I for Session 1-6 Goals

Provide research team with de-identified documents for analysis:

Completed Data Sheet for Goals Session 1-6 (Appendix I)

Coaching Manual

Emails

Log Sheet

Session Notes:

Appendix H

Contact Log

Log of Contact In Between Coaching Sessions

Date                    Method    Length Purpose (content)





Coach Initials: \_\_\_\_\_

Appendix I

Data Sheet for Coaching Sessions 1-6

(To be completed by the Coach)

Coaching Session 1:

Date \_\_\_\_\_ Length of Session: \_\_\_\_\_ (in minutes)

Communication Method: \_\_\_\_\_ Phone \_\_\_\_\_ Skype  
Initials: \_\_\_\_\_

Coach

Self-care self-efficacy: Document the current level reported by the participant in response to the question: “Reflecting on your current situation, on a scale of 1 (not at all confident) to 10 (100% confident), how confident are you that you can establish self-care goals?”

Low                    1   2       3       4       5       6       7       8       9       10      High

Directions: Reflecting on the coaching session just completed, please mark each statement as it applies to your experience with the participant.

Definitely

False                    Mostly

False                    A little bit

False                    A little bit

True                      Mostly

True                      Definitely                    Does

True                      Not Apply

F                          F   F            T   T            T            NA

F                          Participant was provided an opportunity to “tell their story”      F      F  
T   T            T   NA

Participant understands the coaching process      F      F      F      T  
T   T   NA

Participant understands the Web Application interface      F      F      F  
T   T            T   NA

burnout                    Participant understands results of self-assessment (SA) as related to job  
F   F            F      T      T      T   NA

applicable)              Participant understands results of self-assessment (SA) as related to STS (if  
F   F            F      T      T      T   NA

Participant understands the importance of social support      F      F  
T   T            T   NA

Participant understands the importance of self-care      F      F      F  
T   T            T   NA

We have established a collaborative working relationship      F      F  
F   T            T      T   NA

Deviation from protocol (please circle):      YES                  NO

Notes: Please provide an explanation for any deviations from the protocol or for any items you marked as “Definitely False” above. Also, please document any other relevant information.

Coaching Session 2:

Date \_\_\_\_\_ Length of Session: \_\_\_\_\_ (in minutes)

Communication Method:    \_\_\_\_\_Phone    \_\_\_\_\_Skype

Coach Initials:

\_\_\_\_\_

Self-care self-efficacy: Document the current level reported by the participant in response to the question: “How confident are you that you can establish self-care goals?”

Low                      1   2                      3                      4                      5                      6                      7                      8                      9                      10                      High

Directions: Reflecting on the coaching session just completed, please mark each statement as it applies to your experience with the participant.

Definitely

False                      Mostly

False                      A little bit



False	A little bit						
True	Mostly						
True	Definitely	Does					
True	Not Apply						
F	F F	T T	T	NA			
F	We have established a collaborative working relationship					F	F
	T T	T NA					
	Participant can identify strengths related to LB					F	F
	T T	NA					T
	Participant understands impact of B/O on LB areas					F	F
	T T	T NA					F
	Participant understands impact of STS on LB areas					F	F
	T T	T NA					F
	Participant able to choose 1-2 LB areas to focus on during coaching						F
	F F	T T	T NA				
	Participant understands how to set achievable goals					F	F
	T T	T NA					F
	Participant has a plan in place for routine self-care					F	F
	T T	T NA					F
	Participant has plan in place for increasing social support					F	F
	F T	T T	NA				

Deviation from protocol (please circle):      YES                      NO

Notes: Please provide an explanation for any deviations from the protocol or for any items you marked as “Definitely False” above. Also, please document any other relevant information.

Coaching Session 3:

Date \_\_\_\_\_ Length of Session: \_\_\_\_\_ (in minutes)

Communication Method: \_\_\_\_\_Phone \_\_\_\_\_Skype

Coach Initials:

Self-care self-efficacy: Document the current level reported by the participant in response to the question: “How confident are you that you can achieve your self-care goals?”

Low                    1   2        3        4        5        6        7        8        9        10        High

Directions: Reflecting on the coaching session just completed, please mark each statement as it applies to your experience with the participant.

Definitely

False

Mostly

False

A little bit

False

A little bit



True	Mostly							
True	Definitely		Does					
True	Not Apply							
F	F F	T	T	T		NA		
F	Participant identified potential obstacles to goal achievement						F	F
	T T	T	NA					
	Participant understands how to overcome obstacles to achieving goals						F	F
	F F	T	T	T	NA			
	Participant understands role of self-regulation in achieving goals						F	F
	F F	T	T	T	NA			
	Participant is actively engaged in achieving goals						F	F
	T T	T	NA					
	Participant is actively engaged in seeking social support						F	F
	T T	T	NA					
	Participant is actively engaged in self-care behaviors and activities						F	F
	F F	T	T	T	NA			

Deviation from protocol (please circle):      YES              NO

Notes: Please provide an explanation for any deviations from the protocol or for any items you marked as “Definitely False” above. Also, please document any other relevant.



Coaching Session 4:

Date \_\_\_\_\_ Length of Session: \_\_\_\_\_ (in minutes)

Communication Method: \_\_\_\_\_Phone \_\_\_\_\_Skype

Coach Initials:

\_\_\_\_\_

Self-care self-efficacy: Document the current level reported by the participant in response to the question: “How confident are you that you can achieve your self-care goals?”

Low                    1   2            3            4            5            6            7            8            9            10            High

Directions: Reflecting on the coaching session just completed, please mark each statement as it applies to your experience with the participant.

Definitely

False	Mostly
False	A little bit
False	A little bit



True	Mostly							
True	Definitely		Does					
True	Not Apply							
F	F F	T	T	T		NA		
	Participant is actively engaged in achieving goals	F	F	F				
	T T	T	NA					
	Participant is actively engaged in self-monitoring personal indicators of stress	F	F	F	T	T	T	NA
	Participant continues to be actively engaged in seeking social support	F	F	T	T	T	NA	
	Participant actively engaged in self-care behaviors and activities	F	F	T	T	T	NA	F

Deviation from protocol (please circle):      YES                  NO

Notes: Please provide an explanation for any deviations from the protocol or for any items you marked as “Definitely False” above. Also, please document any other relevant information.

Coaching Session 5:

Date \_\_\_\_\_ Length of Session: \_\_\_\_\_ (in minutes)

Communication Method: \_\_\_\_\_Phone \_\_\_\_\_Skype

Coach Initials:

\_\_\_\_\_

Self-care self-efficacy: Document the current level reported by the participant in response to the question: “How confident are you that you can achieve your self-care goals?”

Low                    1   2        3        4        5        6        7        8        9        10        High

Directions: Reflecting on the coaching session just completed, please mark each statement as it applies to your experience with the participant.

Definitely

False                    Mostly

---



False                    A little bit

False                    A little bit

True                     Mostly

True                     Definitely                Does

True                     Not Apply

F                         F F            T T                T                NA

Participant is actively engaged in achieving goals            F            F            F

T T            T NA

Participant is actively engaged in self-monitoring personal indicators of stress

F F            F            T            T            T NA

Participant continues to be actively engaged in seeking social support F

F F            T            T            T NA

Participant actively engaged in self-care behaviors and activities            F

F F            T            T            T NA

Deviation from protocol (please circle):      YES                NO

Notes: Please provide an explanation for any deviations from the protocol or for any items you marked as “Definitely False” above. Also, please document any other relevant information.



Coaching Session 6:

Date \_\_\_\_\_ Length of Session: \_\_\_\_\_ (in minutes)

Communication Method: \_\_\_\_\_Phone \_\_\_\_\_Skype

Coach Initials:

\_\_\_\_\_

Life Balance:

Domain: \_\_\_\_\_ Session 2 rating \_\_\_\_\_

Current rating \_\_\_\_\_

Domain: \_\_\_\_\_ Session 2 rating \_\_\_\_\_

Current rating \_\_\_\_\_

Self-care self-efficacy: Document the current level reported by the participant in response to the question: “How confident are you that you can make your self-care changes a long-term part of your lifestyle?”

Low                    1   2     3     4     5     6     7     8     9     10     High

Directions: Reflecting on the coaching session just completed, please mark each statement as it applies to your experience with the participant.

Definitely

False	Mostly									
False	A little bit									
False	A little bit									
True	Mostly									
True	Definitely			Does						
True	Not Apply									
F	F F	T	T	T		NA				
	Participant achieved 1-month goals	F	F	F	T	T				
	T NA									
	Participant can identify successes	F	F	T	T	T	NA			
	Participant can identify next steps	F	F	F	T	T				
	T NA									

Deviation from protocol (please circle):     YES             NO

Notes: Please provide an explanation for any deviations from the protocol or for any items you marked as “Definitely False” above. Also, please document any other relevant information.



Appendix J  
Additional Session Notes

## Appendix 24

### SupportNet Home Page

Support Net

Welcome Judith | [ Log Out ]

Home Profile About Connect Goals Resources Take 5 Contact Us About Coach Site Map

Home

Getting Started

Step 1: Complete About Me in Profile tab. ✓

Step 2: Complete Professional interests in Profile tab. ✓

Step 3: Complete Personal interests in Profile tab.

Growth

My Active Goals (1)

To become more physically active, 6 of 1 steps completed

More Goal Information...

Encouraging Me

Tip

If you would like more support, add connections to your GOAL or start a discussion in the Resource Room.

Encouragement

Encouraging Others

2/12/2014

Commented on higher goal: improve physical w/d. Being Exercise at least 4 times a week. For approximately 20 minutes a day. Activities can be walking up 2 flights of stairs at least several times a day at my office, and performing mild exercises while out of my office, such as leg lifts, waist twists, stretching with a rubber rope and possibly running in place.

Added a new connection Judith Beck (Coe)...

2/11/2014

Commented on higher goal: To participate more often with others in my profession.

Added a new connection Judith Beck (Coe)...

More...

### SupportNet Assessments Page

Support Net

Welcome Judith | [ Log Out ]

Home Profile About Connect Goals Resources Take 5 Contact Us About Coach Site Map

Assessment Dashboard

Home -> Assessment Dashboard

Search Status | [View Alerts](#)

Social Support

Chart my progress

Take it again

Resources that may help with social support

Burnout Self-efficacy

Chart my progress

Take it again

Resources that may help with burnout self-efficacy

Work Engagement

Chart my progress

Take it again

Resources that may help with work engagement

## SupportNet Goals Page

Support Net | Welcome Judith | Log Out

Home Profile Assess Connect Goals Resources Take 5 Contact Us About Coach Site Use

### Create/Modify Goals

Home -> Goals Dashboard -> Create/Modify Goals

Enter Goal Information [Save Goal](#)

Life Domain: \* Health/Fitness

Goal: \* To become more physically active.

Description: \* It means that I can be more active and less tired with my 6 year old son.

Start Date: \* 2/18/2014 End Date: \* 3/31/2014

Reward(s): I will buy new workout clothes if I complete two weeks of meeting my goals.

[Add step to goal](#)

Steps to Achieve Goal 0 of 3 steps completed

Step 1: I will walk 3 days a week for at least 30 minutes. This can be either on the treadmill or outdoors. [Edit](#)  
Due Date: 2/18/2014 [In Progress...](#) [Delete](#)

[Delete Goal](#) [Cancel Changes](#) [Clear Form](#) [Save Goal](#)

#### Tips for Success

1. Consider making small, realistic changes over time. It is important to make each step 90% achievable.
2. Creating small steps and building up over the weeks improves your chances for success. **SUCCESS IS THE KEY!**
3. For example, to increase physical activity, start out slowly (e.g., start with or add 5-10 minutes to your current activity) and build upon that foundation.
4. Please Note: You should always consult with a physician before starting a new exercise program.

[Hide Tips](#)

My Connections [Find Encouragement](#)

Discussions on Goal [View](#)

## SupportNet Connections Page

Support Net | Welcome Judith | Log Out

Home Profile Assess Connect Goals Resources Take 5 Contact Us About Coach Site Use

### Connections Dashboard

Home -> Connections Dashboard

[Recent Activity](#) [My Connections](#) [My Goal Connections](#)

Goal: To become more physically active. [Go to Goal](#)

#### Possible New Connections for Goal

- [Connect](#)  
Location: Colorado Springs, CO  
Has experience or expertise in: Posttraumatic Stress Disorder, Substance Abuse/Addictions, Trauma Recovery, Parenting Skills, Grief and Bereavement, Child and Adolescent Issues
- [Connect](#)  
Location: Colorado Springs, CO  
Has experience or expertise in: Trauma Recovery, Posttraumatic Stress Disorder, Combat Stress, Cognitive Processing Therapy (CPT), Mood Disorders, Grief and Bereavement, Eating Disorders, Domestic Violence, Child and Adolescent Issues, Anxiety Disorders
- [Connect](#)  
Has experience or expertise in: Anger Management, Anxiety Disorders, Borderline, Combat Stress, EMDR Treatment, Grief and Bereavement, Mood Disorders, Pain Management, Posttraumatic Stress Disorder, Sexual/physical abuse, Stress Management Skills, Substance Abuse/Addictions

#### Current Connections of Goal

## SupportNet Take 5

Support Net Welcome Judith | [ Log Out ]

Home Profile Assess Connect Goals Resources **Take 5** Contact Us About Coach Site Use

**5 Take 5** Show info

Home → Take 5

We understand that you are a very busy person and time is something you never seem to have, but below are a few ideas about how to best use just 5 minutes of your time to significantly benefit you.

Want To Move?	Want To Sit?
If you feel agitated or angry, we recommend trying a "sitting" exercise to promote calmness.	If you feel spaced out or lethargic, we recommend trying a "moving" exercise to increase focus and energy.
<a href="#">Yoga</a>	<a href="#">Meditation</a>
<a href="#">Stretching</a>	<a href="#">Progressive Muscle Relaxation</a>
<a href="#">Tai Chi</a>	<a href="#">Gratitude</a>

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[Contact Us](#)

## SupportNet Resource Room

Support Net Welcome Judith | [ Log Out ]

Home Profile Assess Connect Goals Resources **Take 5** Contact Us About Coach Site Use

**Resource Room** Show info

Home → Resource Room

<b>Evidence-Based Treatments</b>	What is the latest research saying about evidence-based therapeutic practices?	<ul style="list-style-type: none"> <li>Cognitive Processing Therapy</li> <li>EMDR</li> <li>Prolonged Exposure Therapy</li> <li>Stress Inoculation Training</li> </ul>
<b>Life Balance Issues</b>	What can we do to improve our quality of life?	<ul style="list-style-type: none"> <li>Self-Care</li> <li>Work-Balancing</li> <li>Work-Life Balance</li> <li>Goal Setting</li> </ul>
<b>Health Status</b>	What elements make our work easier and more rewarding?	<ul style="list-style-type: none"> <li>Self-Efficacy</li> <li>Social Support</li> <li>Work Engagement</li> </ul>
<b>Stress Indicators</b>	What are stress and burnout, and how do they affect our work?	<ul style="list-style-type: none"> <li>Job Burnout</li> <li>Perceived Stress</li> <li>Secondary Traumatic Stress</li> </ul>
<b>Clinician Toolkit</b>	Need tools for yourself and your client for understanding and treating PTSD?	<ul style="list-style-type: none"> <li>For the Clinician</li> <li>For the Client</li> <li>Medications for PTSD</li> <li>Neurobiology of Trauma</li> </ul>

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## Appendix 25



### Psychometric Examination of a Readiness Scale for Participants Using an Online Intervention

Arjun Bhalla, M.A., Jordan McDonald, B.A., Nadia Al-Tabaa, B.S., Scott Hanneman, B.A., Robert Durham, Ph.D., & Charles C. Benight, Ph.D.  
University of Colorado Colorado Springs, Department of Psychology



- ❖ There has been a rise in the amount of internet-mediated/ eHealth interventions.
- ❖ High rates of attrition and low adherence have been present within eHealth intervention research.
- ❖ There is a limited base of literature highlighting individual characteristics related to attrition and adherence.
- ❖ The current study sought to standardize the eHealth readiness scale, implemented to examine individual characteristics assessing participant readiness, and adherence.
- ❖ Study 1 involved initial validation of scale reliabilities and criterion validity.
- ❖ Study 2 involved further validation with a participants in an RCT of the SupportNet intervention, which aimed to reduce burnout and secondary-traumatic stress in military mental health providers.

It was hypothesized that the eHealth readiness scale would:

- ❖ demonstrate adequate internal consistency with Cronbach's alphas greater than or equal to .70 for Study 1 and 2.
- ❖ possess a one-factor solution structure accounting for greater than or equal to 30% of the variance and an extracted eigenvalue relative to the amount of scale items.
- ❖ establish convergent, predictive, discriminant, and divergent validity by positively correlating with general self-efficacy, and SupportNet usage tracking data, negatively correlating with technology anxiety, and showing no relation with social desirability.

**Participants**

- ❖ Study 1: 195 undergraduates (Age range = 18-51,  $M = 21.53$ ,  $SD = 5.16$ ).
- ❖ Study 2: 57 military mental health providers (Age range = 29-80,  $M = 49.25$ ,  $SD = 12.29$ ).

**Scale Development**

- ❖ The final scale contained 7-items. 27-items were initially developed to encompass one's preparedness to engage in eHealth interventions. Items related to internet self-efficacy, attitudes toward technology, and technology usage behavior.

**Measures**

- ❖ Technology Anxiety Scale (TA; Meuter et al. 2003)
- ❖ Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960)
- ❖ General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995)
- ❖ Time spent on SupportNet website

**Table 2**  
Readiness Scale Items, Item-total Correlations, Cronbach's Alpha without Item, and Factor Loading for the undergraduate Sample ( $N = 195$ )

Item	<i>M</i>	<i>SD</i>	Item-total <i>r</i>	$\alpha$ without item	Factor loading
1. I would be comfortable using an internet-connected device several times a week to participate in a lifestyle intervention online	4.13	1.32	.55	.75	.65
2. I feel that my previous experiences with online technologies are important to my success with using a lifestyle intervention	4.31	1.18	.50	.76	.64
3. Using internet technologies makes me more efficient in my daily functioning	4.70	1.09	.63	.74	.79
4. I believe that I am able to make good use of internet websites and web applications	5.10	.80	.61	.75	.77
5. Using internet technologies provide me with a feeling of independence	4.41	1.13	.51	.76	.69
6. I enjoy the challenge of figuring out the different functions of websites and web applications	3.90	1.41	.49	.77	.64
7. I use an internet connected device to keep track of my lifestyle (e.g., daily tasks, goals, and meetings)	4.12	1.53	.44	.78	.56

*Note.*  $\alpha$  without items = Overall Cronbach's alpha of scale if that particular item were to be removed. Factor loading was from PCA analysis.

- ❖ Study 1: Cronbach's  $\alpha = .81$ ; Study 2: Cronbach's  $\alpha = .83$ .
- ❖ The scale showed a positive correlation with GSE, a negative correlation with TA, and no correlation with MCSDS. (see Table 1).
- ❖ Study 1: A one-factor solution was found with an eigenvalue of 3.25, explaining 46.42% of the variance; Study 2: A one-factor solution was found with an eigenvalue of 3.52, accounting for 50.34% of the variance.
- ❖ No correlation was found between readiness and duration of time spent on SupportNet,  $r(49) = -.19$ ,  $p = .18$ .

- ❖ Results showed the eHealth readiness scale items demonstrate good internal consistency and a stable one-factor solution.
- ❖ Results indicated the eHealth readiness scale is a sufficient criterion valid measure of self-efficacy and ease with technology usage.
- ❖ Contrary to the hypothesis, results did not illustrate any significant relation between eHealth readiness and time spent on the SupportNet website. Thus predictive validity was unable to be established for the scale.
- ❖ Small sample size ( $n = 51$ ) and non-normal distribution of usage data likely had a significant impact on results.
- ❖ Other limitations included a specific sample (for Study 2) and no measure of temporal stability.
- ❖ Those deemed "ready" may not necessarily use interventions more.
- ❖ Future research should focus on further examining the relationship between readiness and eHealth intervention usage with a larger, general sample of participants.
- ❖ Quality of web-intervention modules, navigability, and structure of eHealth programs should also be examined in relation to readiness and usage to determine the effect of system design on adherence.

**Table 1**  
Correlations, Means, and Standard Deviations for Study 1 ( $N = 195$ )

Measure	1	2	3	4	<i>M</i>	<i>SD</i>
1. eHealth Readiness	–	-.39**	.04	.22*	30.65	5.69
2. TA		–	-.11	-.23**	23.55	9.35
3. MCSDS			–	.14*	17.40	5.51
4. GSE				–	32.05	3.56

*Note.* \*\* indicates  $p < .01$ . \* indicates  $p < .05$ .

**ACKNOWLEDGEMENTS**

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# Appendix 26

## Abstract

The present study investigated the relationship between web intervention engagement and the reduction of job burnout in a randomized controlled trial. We examined both subjective and objective measures of engagement and how they affect the reduction of job burnout. We generated objective engagement measures based on participants' user history. Results showed small to medium negative correlations between engagement and job burnout. The number of unique pages visited was significantly correlated with subjective engagement measures. Patterns that emerged for correlations among job burnout and subjective engagement measures were discussed.

## Introduction

- With the rapid advances in computer technology and internet access there has been a growing trend in the provision of mental health interventions over the Internet (Wells, Mitchell, Finkelhor, & Becker-Blease, 2007).
- Research has shown positive psychological, behavioral, and clinical outcomes (Cavanagh, et al., 2006; Tate & Zabinski, 2004) for those that use the intervention; however, limited participation and high attrition rates are common for mental health web interventions (Eisenbach, 2009; Ybarra & Eaton, 2005).
- As a result, the degree of engagement can have a significant effect on key outcomes and quality of life impact (Bennett & Glasgow, 2009).

This study examined the objective and subjective measures of engagement and how engagement affects the reduction of job burnout in a randomized controlled trial (RCT) for SupportNet, a web intervention developed to reduce job burnout by enhancing self-efficacy and social support among military behavioral healthcare providers.



Figure 1. SupportNet Web Intervention

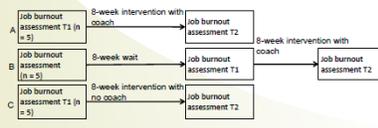
## Method

### Participants

U.S. Military behavioral healthcare providers (N = 15, 80.0% female, mean age = 48.87).

### Inclusion criteria

- Working at least one year as a healthcare provider (e.g., physician, nurse, clinical psychologist, counselor, or social worker).
- Indirectly exposed to trauma through interaction with patients.
- Oldenburg Burnout Inventory (OLBI) score > 2.0 (range 1-5) (Halbesleben & Demerouti, 2005).



## Results

Table 1. Cronbach's Alpha, Means, and Standard Deviations for Job Burnout

Job Burnout	α	Mean	SD
Overall	.85	2.62	.49
Time 1			
Disengagement	.63	2.43	.42
Exhaustion	.82	2.80	.66
Overall	.90	2.31	.56
Time 2			
Disengagement	.85	2.31	.66
Exhaustion	.82	2.32	.60

Table 2. Means and Standard Deviations for Engagement

	Mean	SD
How many hours (Duration)		
Goal Setting	0.73	0.70
Self-Assessment	0.80	0.56
Resource Room?	0.60	0.51
Social Networking?	0.43	1.34
How often (Frequency)		
SupportNet use in general	3.27	1.16
Goal Setting	2.33	0.68
Self-Assessment	2.33	0.96
Resource Room	2.13	0.90
Social Networking	1.57	1.16
Total Minutes	113.56	105.00
Mean Minutes / Page	0.71	0.43
Number of		
Clicks	123.8	68.30
Logins	6.71	4.23
Unique Pages Visited	12.07	1.38
Social Connections	0.86	1.23
Goals	1.14	0.65

Table 3. Partial Correlations Between Subjective Engagement and Job Burnout

Job Burnout Time 2	Hours spent (Duration)				Frequency				
	Self-Asmt	Social	Goal	Res	SupportNet use	Goal	Self-Asmt	Res	Social
Overall	-.11	.00	-.44	-.14	-.39	-.44	-.43	-.39	.00
Disengagement	-.14	.15	-.49	-.16	-.25	-.43	-.40	-.39	.12
Exhaustion	-.01	-.12	-.27	-.09	-.31	-.29	-.29	-.27	-.11

Table 4. Partial Correlations Between Objective Engagement and Job Burnout

Job Burnout Time 2	# Clicks	Mean Minutes / Page	# Logins	# Unique Pages	# Social Connections	# Goals
Overall	-.30	-.42	-.39	-.43	.08	-.31
Disengagement	-.24	-.31	-.28	-.40	.15	-.20
Exhaustion	-.31	-.47	-.38	-.41	.04	-.36

In the correlations between objective and subjective engagement measures, the number of unique pages visited (objective) was strongly correlated with subjective measures of engagement (see Table 5).

Table 5. Pearson Correlations Between Objective and Subjective Engagement

	Clicks	Mean Minutes / Page	Total Minutes	# Logins	# Unique Pages	# Social Connections	# Goals
General SupportNet use	.31	.28	.28	.33	.56*	.15	.37
Goal Setting (hrs)	-.39	-.16	-.21	.33	-.49	-.14	.51
Self-Assessment (hrs)	-.21	-.01	.05	.08	.43	.08	.20
Resource Room (hrs)	-.23	-.20	.26	.28	.80*	-.41	-.37
Social Networking (hrs)	-.01	.38	.11	.08	.21	-.00	-.06
Goal Setting (freq)	.37	.46	.40	.50	.83*	.28	.19
Self-Assessment (freq)	.40	.41	.34	.48	.45	-.08	.63
Resource Room (freq)	-.30	-.38	-.38	-.43	.50	-.28	-.04
Social Networking (freq)	-.07	.22	.04	.05	.21	-.10	-.15

\*p < 0.05 (two-tailed); hrs = hours; freq = frequency

## Discussion

This study examined (1) the degree to which web engagement influences 8-week job burnout outcomes; (2) the differences in subjective and objective measures when compared to job burnout; and (3) the relationships between subjective and objective engagement measures.

- Job burnout disengagement subscale is an indicator of the behavioral aspect of job burnout.
- Participants who reported feeling disengaged from their jobs also perceived low web engagement.
- Among objective measures of engagement, no such pattern was shown.
- Participants who used more features of the web intervention perceived themselves to be more engaged with the intervention.

### Limitations:

- Small sample size
- Lack of attrition data

### Future studies:

- Identify characteristics of participants most likely to disengage
- Include additional social cognitive predictors of engagement such as outcome expectations, perceived need, and self-efficacy.

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# Appendix 27

## SupportNet: Preliminary Results of a Randomized Controlled Trial

Kotaro Shoji, Frederick Gibson, Roman Cieslak, Valerie Anderson, Judith Bock, Lisa Decker, Carolyn Yeager, & Charles C. Benight

### Abstract

The present study examined the effectiveness of the SupportNet intervention, designed to reduce job burnout among behavioral healthcare providers for U.S. military personnel in a randomized controlled trial (RCT). SupportNet is an online intervention, developed based on a theoretical framework of social cognitive theory, designed to reduce job burnout by enhancing self-efficacy and social support. Results of the RCT showed a significant reduction in job burnout among participants who used SupportNet with a coaching component. Findings are discussed in relation to the coaching component of the intervention.

### Introduction

- Behavioral healthcare providers for military personnel are often exposed to indirect trauma through their work with clients; the rate of secondary traumatic stress (STS) among these providers has been estimated at 19.2% (Cieslak et al., 2013).
- Because STS is highly correlated with job burnout, these providers experience a high probability of suffering the effects of burnout.
- We developed the SupportNet intervention (website and professional coaching) to reduce job burnout among military behavioral healthcare providers.

Objective: This study examined the effectiveness of the SupportNet intervention in reducing job burnout among military behavioral healthcare providers in the U.S., using a randomized controlled trial (RCT).

### SupportNet Intervention

SupportNet, developed based on the theoretical framework of social cognitive theory, is a web-based intervention aiming to reduce job burnout among U.S. military behavioral healthcare providers. SupportNet consists of six activities (self-assessment, goal setting, life balance, resources, relaxation, and social networking goal enhancement). For one group, coaches guided users through once a week 30-minute sessions on the website and life improvement. Coaches helped users set up a goal in the goal setting activity and check the progress on user's goal achievement.

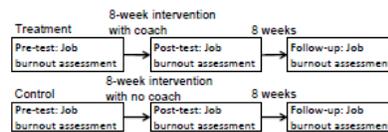
### Method

Participants were 64 behavioral healthcare providers working with military personnel in the U.S. who completed the pre-test survey. Among those 64 participants, 15 of them completed the intervention.

#### Inclusion criteria

- Working at least one year as a healthcare provider (e.g., physician, nurse), clinical psychologist, counselor, or social worker.
- Being indirectly exposed to trauma through interaction with patients.
- Job burnout (Halbesleben & Demerouti, 2005) scores > 2.0.

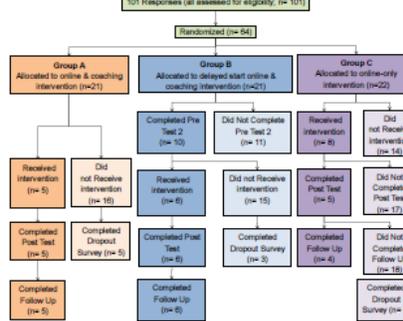
Figure 1. The Flow of the RCT



To compare job burnout pre-, post-, and follow-up RCT between the two groups, we conducted a 3 (time: pre-RCT vs. post-RCT vs. follow-up) by 2 (group) mixed analysis of variance (ANOVA) for both completers and using the intent-to-treat analysis.

- Completers analysis ( $n_{\text{Treatment}} = 11$ ,  $n_{\text{Control}} = 4$ ).
- Intent-to-treat analysis ( $n_{\text{Treatment}} = 42$ ,  $n_{\text{Control}} = 22$ ).
- Last Observation Carried Forward method.

Figure 2. CONSORT Chart



### Results

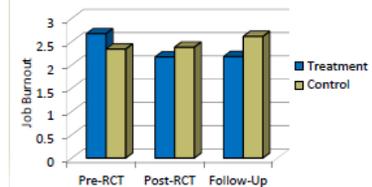
Table 1. Demographic Information and Means and Standard Deviations for Job Burnout for Completers

Variable	Group		Total	p
	Treatment	Control		
Age (SD)	54.00 (8.35)	42.80 (9.42)	48.00 (10.92)	.02
Female %	60.0%	80.0%	78.6%	.55
In a long-term relationship	60.0%	80.0%	78.6%	.11
Job burnout T1	2.61 (0.48)	2.34 (0.35)	2.53 (0.46)	.33
Job burnout T2	2.17 (0.43)	2.38 (0.73)	2.23 (0.51)	.53
Job burnout T3	2.20 (0.42)	2.61 (1.05)	2.32 (0.54)	.30

Note. p values indicated comparisons between two groups.

- No significant main effect for time,  $F(2, 26) = 1.32$ ,  $p = .28$ , partial eta-squared = .09.
- No significant main effect for the group,  $F(1, 13) = 0.12$ ,  $p = .73$ , partial eta-squared = .01.
- Significant interaction effect between the group and time,  $F(2, 26) = 3.78$ ,  $p = .04$ , partial eta-squared = .23 (see Figure 3).

Figure 2. Interaction Effect between Group and Time on Job Burnout



#### Follow-up tests in the treatment group

- Pre- and post-RCT ( $p < .01$ )
- Pre- and follow-up ( $p = .01$ )

#### The intent-to-treat analysis

- Consistent results for the omnibus tests with the analysis with completers.
- No significant differences in the follow-up tests.

### Discussion

- The results of present study showed participants who used the SupportNet with coaching guidance reduced job burnout after the 8-week intervention more than the other group.
- Job burnout among those who participated without coach's guidance was not different between pre- and post-RCT.
- These results indicated that the coaching component with online support was effective in this population. Behavioral healthcare providers may prefer face-to-face interaction rather than working solely online.
- Unclear whether coaching alone or coaching with an online system would be most effective.

#### Limitations:

- Dropouts
- Engagement in the intervention

#### Future studies:

- Apply the coach-online intervention model for other populations (e.g., firefighters, medical providers, teachers).
- Increase engagement in the intervention.

### References

Cieslak, R., Anderson, V., Bock, J., Moore, B. A., Peterson, A. L., & Benight, C. C. (2013). Secondary traumatic stress among mental health providers working with the military: Prevalence and its work- and exposure-related correlates. *The Journal of Nervous and Mental Disease*, 201(11), 917-925. doi:10.1097/NMD.0b0000000000000004

Halbesleben, J. R. B., & Demerouti, E. (2005). The construct validity of an alternative measure of burnout: Investigating the English translation of the Oldenburg Burnout Inventory. *Work and Stress*, 19, 208-220. doi:10.1080/074905005000340728

This research and development project was conducted by the Trauma Health & Hazards Center, University of Colorado, Colorado Springs and is made possible by a research grant that was awarded and administered by the U.S. Army Medical Research & Materiel Command (USAMRMC) and the Telemedicine & Advanced Technology Research Center (TATRC) at Fort Detrick, MD under Contract Number W81XWH-11-2-0153

# Appendix 28



University of Colorado  
Colorado Springs

## The Psychometric Validation of a Readiness Scale for Participants in an Online Intervention for Burnout and Secondary Traumatic Stress

Arjun Bhalla, M.A., Robert Durham, Ph.D., Carolyn Yaeger, M.S., Emily Luther, B.A.,  
Fred Gibson, Ph.D., & Charles Benight, Ph.D.  
University of Colorado Colorado Springs



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### Introduction

- There has been a rise in the amount of internet-mediated eHealth interventions.
- High rates of attrition and low adherence have been present within eHealth intervention research.
- There is a limited base of literature highlighting individual characteristics related to attrition and adherence.
- Results of the initial validation concluded the eHealth readiness scale as being an internally reliable ( $\alpha = .81$ ) and criterion valid measure of self-efficacy and ease with technology usage (Bhalla, 2014).
- The current study sought to assess the psychometric properties of the eHealth readiness scale in an RCT of the SupportNet intervention, which aimed to reduce burnout and secondary-traumatic stress in military mental health providers.

### Hypotheses

It was hypothesized that the eHealth readiness scale would:

- demonstrate adequate internal consistency with Cronbach's alphas greater than or equal to .70,
- possess a one-factor solution structure
- establish predictive validity by positively correlating SupportNet usage tracking data.

### Methods

#### Participants

- 57 military mental health providers (Age range = 29-80,  $M = 49.25$ ,  $SD = 12.29$ ).
- Recruited through research participation solicitations via emails through work places, professional LISTSERVs and cold telephone calls

#### Scale Development

- The final 7-item scale was developed to encompass one's preparedness to engage in eHealth interventions.
- Items related to internet self-efficacy, attitudes toward technology, and technology usage behavior.

#### Measures

- The eHealth Readiness Scale**
- Oldenburg Burnout Inventory (OLBI)**; Halbesleben & Demerouti, (2007) 16-item scale on a 5-point Likert-type scale (1 = strongly disagree and 5 = strongly disagree).
- Secondary Traumatic Stress Scale (STSS)**; Bride et al., (2004) 17-item scale using a 6-point Likert-type scale ranging from scale (0 = never and 5 = very often).
- SupportNet Intervention Usage Tracking Data Metrics** for each participant's logins, and duration off usage

### Procedure

- Participants completed an online questionnaire with several pre-intervention outcome measures.
- Inclusion criteria:** Military mental health provider (on/off-post) working with individuals with PTSD on caseload, a scaled burnout score of 2 (Out of 5).
- Individuals who met the stated criteria were then contacted to request their participation in a controlled trial of SupportNet.
- Participants were randomized to one of three experimental groups (See Figure 1).

### Results

- Cronbach's  $\alpha = .83$ .
- A one-factor solution was found with an eigenvalue of 3.52, accounting for 50.34% of the variance.
- Correlations between the eHealth readiness scale and out measures of the SupportNet intervention are illustrated on Table 1.
- Statistics for individual items are illustrated on Table 2.
- No correlation was found between readiness and duration of time spent on SupportNet,  $r(49) = -.19, p = .18$ .
- Additionally, an inverse correlation between eHealth readiness and burnout scores was found,  $r(51) = -.29, p = .04$



### Table 2

Readiness Scale Items, Item-total Correlations, Cronbach's alpha without Item, and Factor Loading for RCT Sample ( $N = 57$ )

Item	M	SD	Item-total r	$\alpha$ without item	Factor loading
1. I would be comfortable using an internet-connected device several times a week to participate in a lifestyle intervention online	4.40	1.31	.48	.81	.58
2. I feel that my previous experiences with online technologies are important to my success with using a lifestyle intervention	4.19	1.41	.52	.81	.62
3. Using internet technologies makes me more efficient in my daily functioning	4.42	1.32	.60	.79	.72
4. I believe that I am able to make good use of internet websites and web applications	4.95	.79	.54	.81	.69
5. Using internet technologies provide me with a feeling of independence	4.32	1.24	.64	.79	.79
6. I enjoy the challenge of figuring out the different functions of websites and web applications	3.96	1.30	.71	.78	.84
7. I use an internet connected device to keep track of my lifestyle (e.g., daily tasks, goals, and meetings)	3.88	1.60	.56	.81	.70

Note.  $\alpha$  without item = Overall Cronbach's alpha of scale if that particular item were to be removed, Factor loading was from PCA analysis.

### Discussion

- Results demonstrate scale items to have a good internal consistency and a stable one-factor solution.
- Contrary to the hypothesis, results did not illustrate any significant relation between eHealth readiness and time spent on the SupportNet website. Thus predictive validity was unable to be established for the scale.
- Small sample size ( $n = 51$ ) and non-normal distribution of usage data likely had a significant impact on results.
- Other limitations included a specific sample and no measure of temporal stability.
- Those deemed "ready" may not necessarily use interventions more.
- Future research should focus on further examining the relationship between readiness and eHealth intervention usage with a larger, general sample of participants.
- Quality of web-intervention modules, navigability, and structure of eHealth programs should also be examined in relation to readiness and usage to determine the effect of system design on adherence.

### Acknowledgements

This project was made possible by a research grant awarded to Charles C. Benight and administered by the U.S. Army Medical Research & Materiel Command (USAMRMC) and the Telemedicine & Advanced Technology Research Center (TATRC) at Fort Detrick, MD under Contract Number W81XWH-11-2-0153.

### Table 1

Correlations, Means, and Standard Deviations for ( $N=52$ )

Measure	1	2	3	4	5	6	7	M	SD
1. Readiness	-	-.29*	-.18	-.21	.04	-.03	-.10	30.23	6.22
2. OLBI		-	.74**	-.14	-.25	-.12	-.11	43.81	10.75
3. STSS			-	-.31*	-.06	-.04	-.07	37.85	13.65
4. Gender				-	-.23	-.10	.05	1.27	.45
5. Age					-	.28*	.27	49.42	12.31
6. # Logins						-	.81**	3.81	3.78
7. Duration							-	41.19	107.15

Note. OLBI = Oldenburg Burnout Inventory, STSS = Secondary Traumatic Stress Scale, # Logins = Number of times participants logged into SupportNet, Duration = Time spent on SupportNet in minutes. \*\* indicates  $p < .01$ . \* indicates  $p < .05$ .

## Appendix 29

### Effects of Sexual Assault History on the Relationship Between Secondary Traumatic Stress, Job Burnout Self-Efficacy, and Burnout for Military Mental Health Providers

Gina Boesdorfer, B.A.<sup>1</sup> Crystal Nichols, B.S.<sup>1</sup>, Kotaro Shoji, Ph.D.<sup>1</sup>, Frederick Gibson, Ph.D.<sup>1</sup>, and Charles C. Benight, Ph.D.<sup>1,2</sup>  
<sup>1</sup>Trauma, Health & Hazards Center; <sup>2</sup>Department of Psychology, University of Colorado at Colorado Springs

#### Introduction

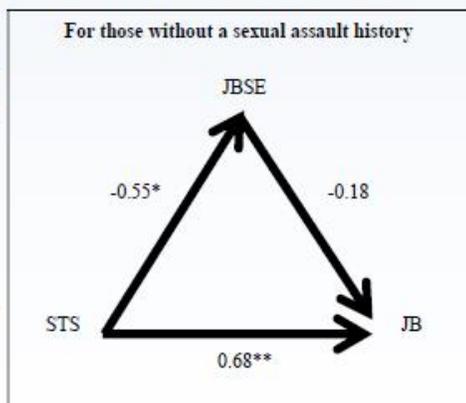
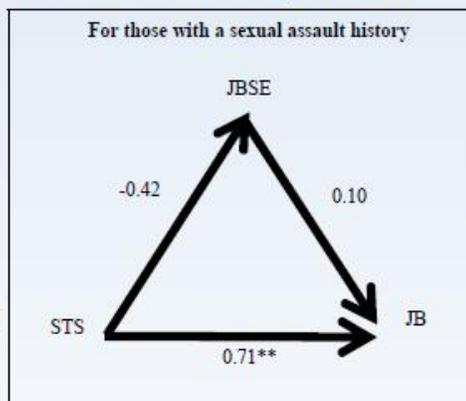
Although all mental health providers are at risk for experiencing the effects of secondary traumatic stress (STS) and job burnout (JB), those with a sexual assault (SA) history may be even more sensitive to this stress and more likely to develop JB (Maier, 2011). Job burnout self-efficacy (JBSE) may serve as a mediating mechanism between STS and JB because a belief in your ability to manage stressors often changes how challenges and goals are approached and dealt with (Alarcon, 2011; Bandura, 1978; Lee, 2011). These variables were examined in military mental health providers with and without a SA history. It was predicted that (a) STS would predict lower levels of JBSE, (b) higher levels of JBSE would predict lower levels of JB, and (c) SA status would moderate whether JBSE mediates the relationship between STS and JB.

#### Methods

This project examined military mental health providers, both civilian and active duty. All on-post Army mental health/behavioral health providers and select western region Tricare providers were sent an email describing the focus of the study and the study link. Participants' ages ranged from 29 to 80 years old. Participants were 65% female and 50% had a doctoral degree. Out of 77 participants, 37 had a previous history of sexual assault. SA was defined as rape or attempted rape, unwanted sexual experience.



Figure 1. The indirect effect of job burnout self-efficacy in the relationship between secondary traumatic stress and job burnout with sexual assault history as a moderator.



Note: \*  $p < 0.05$ ; \*\*  $p < 0.01$ . The coefficients between JBSE and JB was marginally significant,  $p = .06$ .

#### Results

A moderated-mediation analysis showed the indirect effect of JBSE in the relationship between STS and JB was dependent on SA. The indirect effect was significant when participants did not have SA experience ( $B = 0.09$ , Bootstrap 95% CI = 0.02 – 0.20). However, there was no such indirect effect when participants had SA history ( $B = 0.00$ , Bootstrap 95% CI = -0.03 – 0.08). Individuals with a SA history had higher levels of STS than those without a SA history,  $t(75) = 2.20$ ,  $p = 0.03$ . There was not a significant difference between those with a SA history and those without a SA history for JB,  $t(75) = 0.06$ ,  $p = 0.95$ , or JBSE,  $t(75) = -0.11$ ,  $p = 0.92$ .

Table 1  
Correlations Among Study Variables

	Secondary Traumatic Stress	Job Burnout
Job Burnout	.02	1
Job Burnout Self-Efficacy	-.35**	-0.35**

Note. \*  $p < .05$ ; \*\*  $p < .01$ .

#### Discussion

The results suggest that JBSE serves as a self-regulatory role by which STS relates to JB in providers without a SA history. For those with a SA history, the distress caused by the trauma may override the buffering effect that JBSE has on the relationship between STS and JB. These providers may have unique challenges and self-regulatory processes related to STS and JB that should be explored further.



This research was made possible by a research grant that was awarded and administered by the U.S. Army Medical Research & Materiel Command (USAMRMC) and the Telemedicine & Advanced Technology Research Center (TATRC) at Fort Detrick, MD under Contract Number W81XWH-11-2-0153. The views expressed in this poster are solely those of the authors and do not represent an endorsement by or the official policy of the U.S. Army, the Department of Defense, or the U.S. government.



## Appendix 30



### XIV Conference of European Society for Traumatic Stress Studies

Trauma in Changing Societies:  
Social Contexts and Clinical Practice

10-13 June 2015 Vilnius, Lithuania



## ORAL PRESENTATION SESSION: **Secondary traumatization.**

Chair: Roman Cieslak

June 12th, 2015, 16:15–17:45, Hall GAMMA

- 1. What are the best predictors of PTSD in Portuguese firefighters?**  
Angela Maia, Ricardo Pinto, Sandra Henriques, Claudia Carvalho, Ines Jongenelen
- 2. Mental health help-seeking amongst police officers with a military background: A theoretical model based on social identity.**  
Liz Royle
- 3. Trauma exposure, coping strategies and family support: a Portuguese volunteer firefighters sample.**  
Rafaela Lopes, Angela Maia
- 4. Which comes first, job burnout or secondary traumatic stress?**  
Roman Cieslak, Kotaro Shoji, Magdalena Lesnierowska, Ewelina Smoktunowicz, Judith Bock, Charles C. Benight

## Which Comes First, Job Burnout or Secondary Traumatic Stress?

Roman Cieslak,  
Kotaro Shoji,  
Magdalena Lesnierowska,  
Ewelina Smoktunowicz,  
Judith Bock,  
Charles C. Benight  
Aleksandra Luszczynska



## First Things First

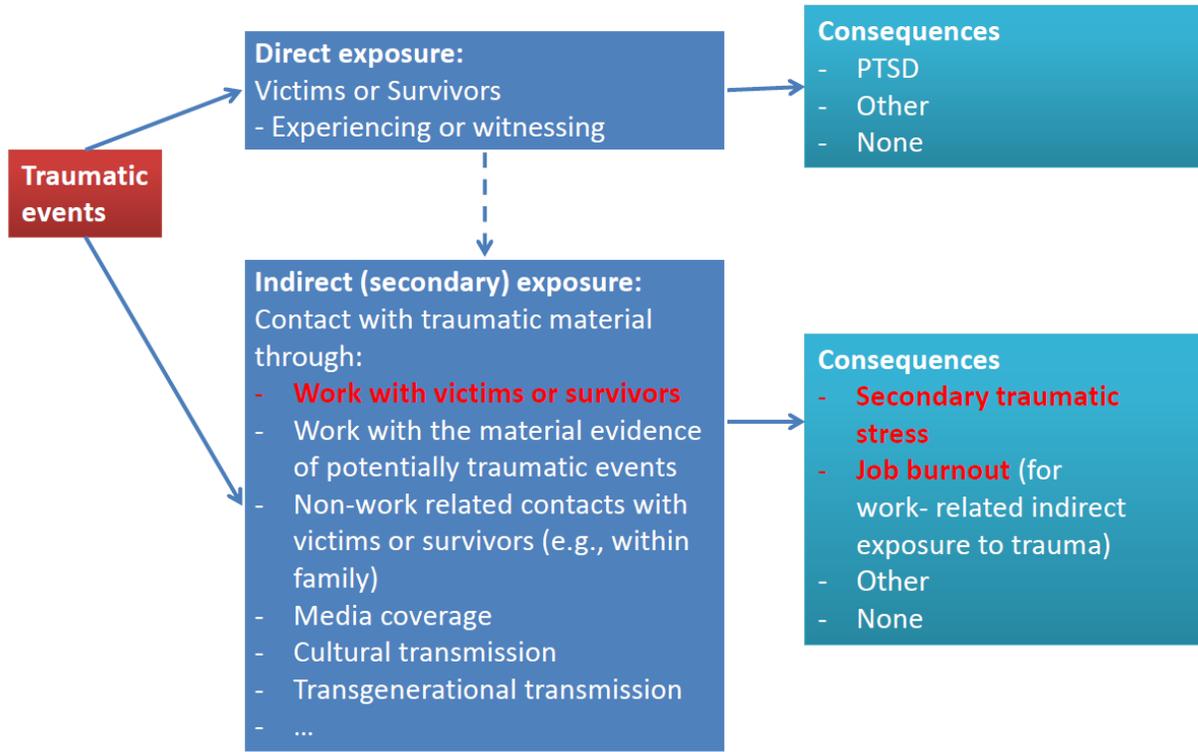
This study was supported by:

1. The grant awarded to Charles C. Benight and administered by the U.S. Army Medical Research and Materiel Command and the Telemedicine and Advanced Technology Research Center at Fort Detrick, Maryland, under Contract Number W81XWH-11-2-0153;
2. The grant from the National Science Center, Poland (N N106 139537) awarded to Roman Cieslak.

**The views expressed in this presentation are solely those of the authors and do not represent an endorsement by or the official policy of the U.S. Army, the Department of Defense, or the U.S. government.**

Shoji, K., Lesniewska, M., Smoktunowicz, E., Bock, J. Luszczynska, A., Benight, C., & Cieslak, R. (in preparation). *What Comes First: Job Burnout or Secondary Traumatic Stress? A Longitudinal Investigation of Bidirectional Relationships.*

## Consequences of Direct and Indirect Exposures to Traumatic Events



## Prevalence

### **Prevalence of job burnout:**

- reaches up to **67%** among mental health workers (Morse , Salyers , Rollins, Monroe-DeVita, Pfahler, 2012)

### **The prevalence of secondary traumatic stress (STS):**

- **15.2%** among social workers (Bride, 2007)
- **19.2%** among U.S. mental health providers working with the military (Cieslak, Anderson, Bock, Moore, Peterson, Benight (2013),
- **39%** among juvenile justice education workers (Smith Hatcher, Bride, Oh, King, Catrett, 2011)

## STS: Definitions

**Secondary traumatic stress** (also called secondary posttraumatic stress; secondary PTSD) is usually conceptualized as **reactions resembling PTSD** and thus includes symptoms that are parallel to those observed in people directly exposed to trauma (Bride et al., 2004)

- *Secondary Traumatic Stress Scale* (STSS; Bride et al., 2004), 17 items to measure three clusters of symptoms: **intrusive re-experiencing** of the traumatic material, **avoidance** of trauma triggers and emotions, and increased physical **arousal** (Bride et al., 2004) (see criteria B, C, and D for PTSD in DSM-IV).

**Vicarious trauma** focuses on **cognitive effects** of indirect exposure. A negative shift in worldview occurs as a result of an empathetic engagement with clients' or patients' traumatic material (Pearlman, 1996).

- *Traumatic Stress Institute Belief Scale, Revision L* (TSI-BSL; Pearlman, 1996) measures vicarious trauma and accounts for **cognitive disruptions** in the five schema areas: safety, trust, esteem, intimacy, and control.

**Compassion fatigue** is defined as a **reduced empathic capacity or client interest** manifested through **behavioral and emotional reactions** from exposure to traumatizing experiences of others (Adams, et al., 2006).

- *Professional Quality of Life* (ProQOL; Stamm, 2010).

## Job Burnout: Three-Component Definition

Job burnout may be defined as “a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by three dimensions: **exhaustion, cynicism, and inefficacy**” (Maslach et al., 2001, p. 397).

- *The Maslach Burnout Inventory – General Survey* (MBI-GS; Maslach et al., 2001).
- *The MBI-Human Services Survey* - in occupations requiring contact with patients
- *the MBI-Educators Survey* – for professionals working with students or pupils

	Range of correlation coefficients (r) retrieved from original studies	The estimate of the average effect (weighted r)
SE – JB	-.609 – .224	-.327
SE – Exhaustion	-.549 – .007	-.306
SE – Depersonalization/cynicism	-.561 – -.050	-.325
SE – Lack of accomplishment/inefficacy	<b>-.836 – -.068</b>	<b>-.487</b>

Shoji, K., Cieslak, R., Smoktunowicz, E., Rogala, A., Benight, C., & Luszczynska, A. (in press). Associations Between Job Burnout and Self-Efficacy: A Meta-Analysis. *Anxiety, Stress, & Coping*. doi:10.1080/10615806.2015.1058369

## A Two-Dimensional Job Burnout Framework

A two-dimensional job burnout framework focuses on

- **exhaustion** and
  - **disengagement** from work, defined as “distancing oneself from one’s work and experiencing negative attitude toward the work objects, work content, or one’s work in general” (Demerouti, Bakker, Vardakou, & Kantas, 2003, p. 14).
- *The Oldenburg Burnout Inventory* (OLBI)

Burnout defined as “a consequence of intensive physical, affective, and cognitive strain, i.e., as a long-term consequence of prolonged exposure to certain job demands” (Demerouti et al., 2003, p. 14).



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## A Meta-Analysis of the Relationship Between Job Burnout and Secondary Traumatic Stress Among Workers With Indirect Exposure to Trauma

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## Description of Analyzed Material

$k = 41$  original studies

$N =$  data from 8,256 workers were analyzed

Sample sizes: varied from 13 to 961 participants ( $M = 198.63$ ,  $SD = 205.48$ )

Gender: 59.03% of women in the average sample

Occupational groups:

- therapists, mental health professionals, social workers, and counselors (36.58%;  $k = 15$ )
- emergency, ambulance or rescue workers (12.20%;  $k = 5$ )
- child care workers and child healthcare providers (9.76%;  $k = 4$ )
- nurses (7.32%;  $k = 3$ )
- forensic specialists (4.88%;  $k = 2$ )
- chaplains (4.88%;  $k = 2$ )
- and other non-categorized professionals (24.39%,  $k = 10$ )

## Conclusions in the Meta-Analysis

### Conclusion:

- There is a strong correlations between STS and JB ( $r = .691$ ; 48% of shared variance)
- Cultural and methodological factors might be responsible for the size of the correlations.

### Question:

- **Coexistence or causal** relationship between STS and JB?

## Aims of the Study

We **aimed** at testing the **directions** of the associations between job burnout and STS

Hypotheses were tested in **two longitudinal studies**

In particular, we explored the following three alternative hypotheses:

1. Job burnout at Time 1 would predict STS at Time 2 whereas STS at Time 1 would not predict job burnout at Time 2.  
**JB → STS**
2. STS at Time 1 would predict job burnout at Time 2 whereas job burnout at Time 1 would not explain STS at Time 2  
**STS → JB**
3. Job burnout at Time 1 would explain STS at Time 2 and STS at Time 1 would predict job burnout at Time 2  
**JB ↔ STS**

## Participants



Study 1: **U.S. behavioral healthcare providers** working with military personnel suffering from trauma

Study 2: **Polish mental and healthcare professionals working** with civilians exposed to various traumatic experiences

### Inclusion criteria:

Study 1:

- (a) working at least one year as a behavioral healthcare provider, clinical psychologist, counselor, or social worker
- (b) providing services for **military personnel**; and
- (c) experiencing indirect exposure to traumatic stress through their work.

Study 2:

- (a) working for at least one year as a healthcare provider, social worker, or first responder
- (b) providing services for **civilians** exposed to traumatic events; and
- (c) experiencing indirect exposure to trauma at work

### Sample size

Study 1: 294 at Time 1 and **135** at Time 2 (6-month gap)

Study 2: 304 at Time 2 and **194** at Time 2 (6-month gap)

## Participants



### Study 1

Age :  $M = 50.62$  years old ( $SD = 12.58$ )

Occupation: **clinical psychologists** (37.0%),  
**counselors** (28.9%),  
social workers (20.7%), and  
healthcare providers (6.7%).

Indirect traumatic exposure: life threatening illness or injury (91.9%),  
**military combat** (91.1%),  
sudden unexpected death of someone close (90.4%),  
sexual assault (87.4%),  
physical assault (85.9%),  
transportation accidents (83.7%),  
natural disasters (68.9%), and  
life threatening crime (57.0%).

## Participants

### Study 2

Age:  $M = 35.10$  years old ( $SD = 8.08$ ).

Occupation: **healthcare providers** (44.8%),  
**social workers** (41.8%), and  
other professions (11.9%).

Indirect traumatic exposure: life-threatening injury or illness (88.1%),  
physical assault (87.1%),  
sudden unexpected death of someone close (83.5%),  
transportation accidents (71.1%),  
sexual assault (50.5%),  
natural disasters (30.4%),  
**combat-related traumatic events** (7.2%).



## Participants

Measure	Levels	 Study 1 Time 1	 Study 1 Time 2	 Study 2 Time 1	 Study 2 Time 2
<b>Gender</b>					
	Female	<b>66.3% (195)</b>	<b>71.1% (96)</b>	<b>76.3% (232)</b>	<b>79.9% (155)</b>
	Male	33.7% (99)	28.9% (39)	22.7% (69)	18.6% (36)
<b>Relationship status</b>					
	Long-term relationship (LTR)	<b>76.2% (224)</b>	<b>72.6% (98)</b>	<b>73.7% (224)</b>	<b>77.3% (150)</b>
	Not in LTR	21.4% (63)	25.2% (34)	25.7% (78)	22.2% (43)
<b>Education</b>					
	High school	0.3% (1)	0 (0%)	20.4% (62)	18.0% (35)
	Associate's degree	0.3% (1)	0 (0%)	-	-
	Bachelor's degree	2.0% (6)	1.5% (2)	<b>21.4% (65)</b>	<b>19.1% (37)</b>
	Master's degree	<b>45.2% (133)</b>	<b>51.1% (69)</b>	<b>56.6% (172)</b>	<b>61.3% (119)</b>
	Doctorate degree	<b>52.0% (153)</b>	<b>47.4% (64)</b>	1.0% (3)	0.5% (1)

## Measures

**Job burnout.** *The Oldenburg Burnout Inventory* (Halbesleben & Demerouti, 2005) is a 16-item questionnaire used to assess **disengagement** (eight items) and **exhaustion** (eight items).

Response scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

- Disengagement in Study 1:  $\alpha = .85$  at T1 and  $\alpha = .86$  at T2
- Exhaustion in Study 1:  $\alpha = .81$  at T1 and  $\alpha = .85$  at T2
- Disengagement in Study 2:  $\alpha = .79$  at T1 and  $\alpha = .81$  at T2
- Exhaustion in Study 2:  $\alpha = .82$  at T1 and  $\alpha = .78$  at T2

**Secondary traumatic stress.** *The Secondary Traumatic Stress Scale* (Bride, Robinson, Yegidis, & Figley, 2004) is a 17-item measure of the frequency of STS symptoms in the previous month.

Responses are provided on a 5-point scale ranging 1 (*never*) to 5 (*very often*).

- Study 1:  $\alpha = .93$  at T1 and  $\alpha = .93$  at T2
- Study 2:  $\alpha = .92$  at t1 and  $\alpha = .93$  at T2

**Indirect exposure to trauma.** *The Secondary Trauma Exposure Scale* (Cieslak et al., 2013)

A list of 10 events; participants indicate whether they had experienced each event through work with their clients.

Responses: 1 (*never*) to 7 (*every day*).

## Dropout Analysis

### Study 1: no significant differences between completers and dropouts in:

- disengagement at T1,  $t(292) = 0.82, p = .41,$
- exhaustion at T1,  $t(292) = 0.90, p = .37,$
- STS at T1,  $t(292) = 0.14, p = .89,$
- age,  $t(288) = 0.08, p = .94,$
- gender,  $\chi^2(1) = 0.40, p = .53,$
- profession,  $\chi^2(3) = 0.28, p = .96,$
- relationship status,  $\chi^2(1) = 0.84, p = .36,$  and
- education,  $\chi^2(4) = 4.89, p = .30.$

### Study 2: no significant differences between completers and dropouts in:

- T1 disengagement,  $t(302) = 1.22, p = .22;$
- T1 exhaustion,  $t(302) = 0.09, p = .93,$
- T1 STS,  $t(302) = 0.59, p = .55,$
- age,  $t(275) = 0.65, p = .52,$
- profession,  $\chi^2(2) = 2.49, p = .29,$
- intimate relationship status,  $\chi^2(1) = 3.24, p = .07,$  and
- education,  $\chi^2(3) = 5.63, p = .13.$

There were **more women among completers** than among drop-outs,  $\chi^2(1) = 4.61, p = .03$

## Preliminary Analysis

Measures	Study 1 M (SD) 	Study 2 (M (SD) 	t
1. Emotional Exhaustion T1	2.54 (0.70)	<b>2.82 (0.68)</b>	3.61***
2. Emotional Exhaustion T2	2.53 (0.76)	<b>2.80 (0.60)</b>	3.45***
3. Disengagement T1	2.35 (0.70)	<b>2.71 (0.64)</b>	4.75***
4. Disengagement T2	2.40 (0.76)	<b>2.77 (0.65)</b>	4.61***
5. Secondary Traumatic Stress T1	1.88 (0.61)	<b>2.33 (0.68)</b>	6.28***
6. Secondary Traumatic Stress T2	1.76 (0.62)	<b>2.28 (0.69)</b>	7.14***
7. Work experience in years T1	<b>15.70 (10.38)</b>	10.38 (8.52)	5.09***
8. Indirect trauma frequency T1	<b>6.16 (1.12)</b>	4.79 (1.74)	8.06***

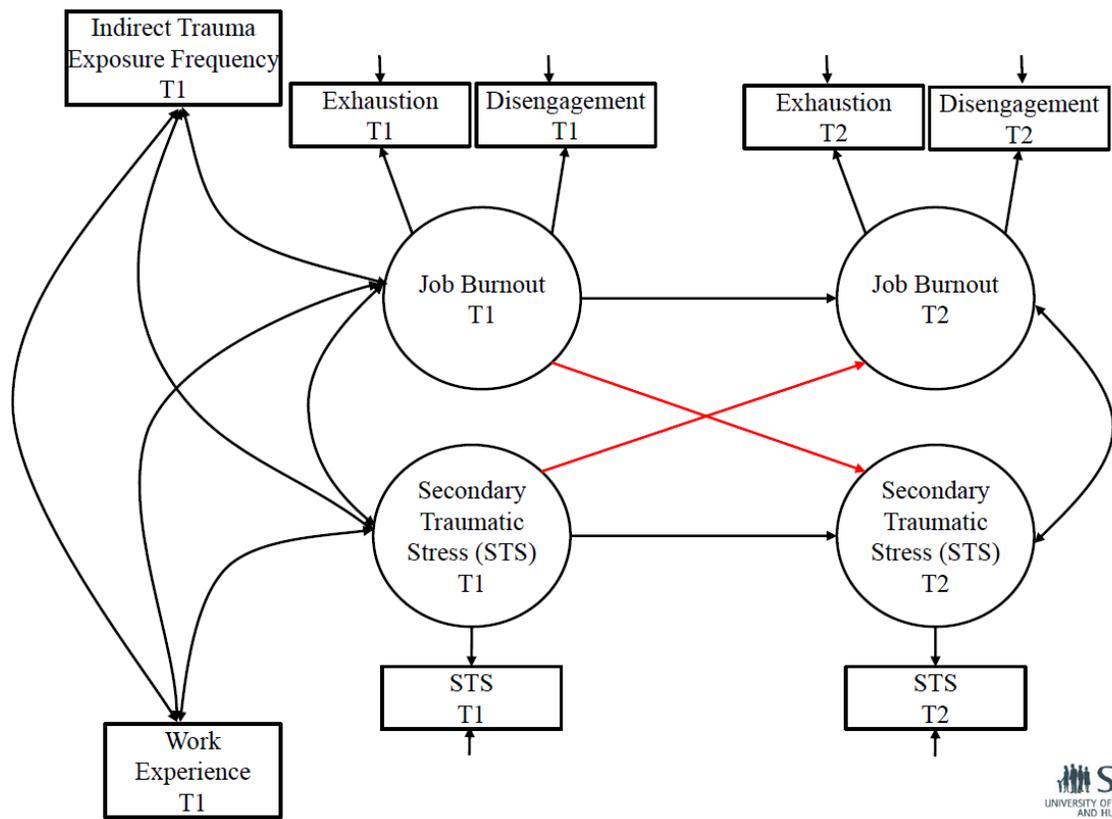
## Correlations for Study 1 (below diagonal) and Study 2 (above diagonal)

Measure	1	2	3	4	5	6	7	8
1. Emotional Exhaustion T1	 .69***	.68***	.49***	.68***	.60***	.04	-.02	
2. Emotional Exhaustion T2	.77***	-	.58***	.66***	.57***	.62***	.09	.01
3. Disengagement T1	.80***	.64***	-	.74***	.52***	.45***	.02	-.07
4. Disengagement T2	.67***	.76***	.77***	-	.42***	.42***	.00	-.00
5. Secondary Traumatic Stress T1	.64***	.57***	.54***	.48***	-	.79***	.17*	.10
6. Secondary Traumatic Stress T2	.59***	.67***	.52***	.55***	.75***	-	.23**	.14
7. Work experience in years T1	-.09	-.03	-.10	-.10	-.10	.04	-	.15*
8. Indirect trauma frequency T1	-.19*	-.24**	-.31***	-.29***	-.13	-.18*	-.11	-

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

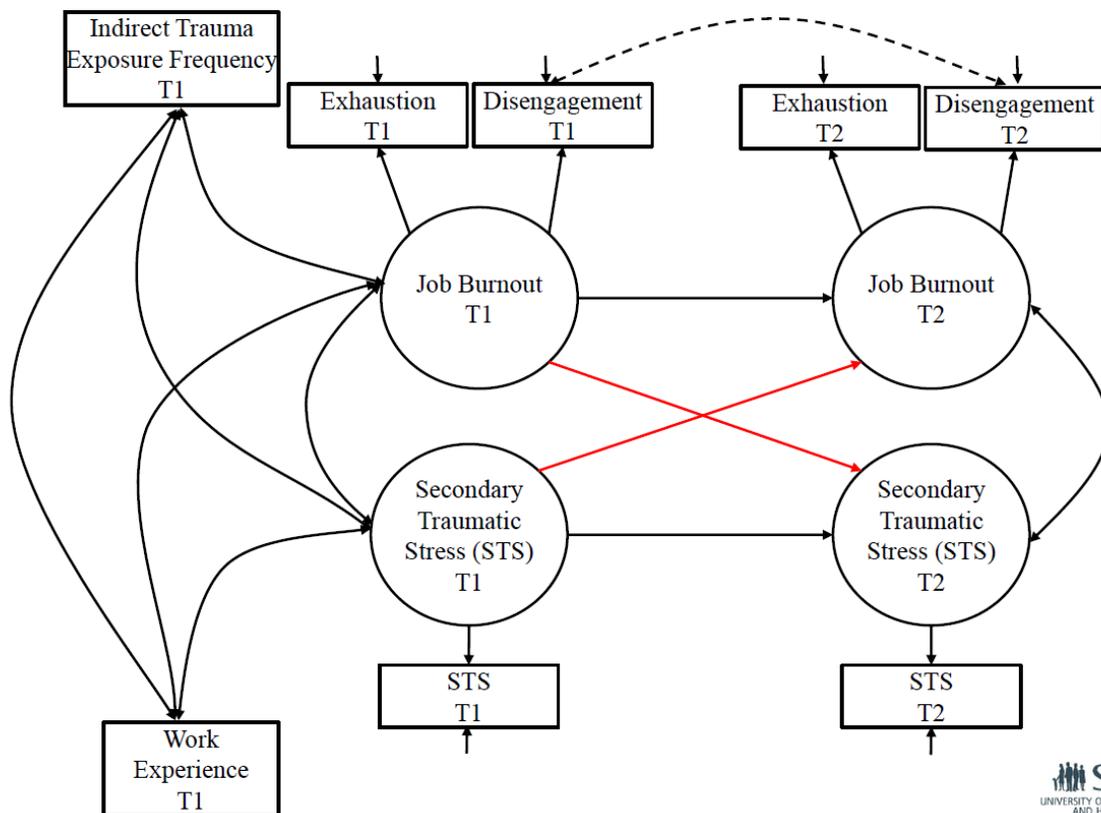
### Hypothesized model

Study 1: RMSEA = .169, CFI = .922, SRMR = .041.  
Study 2: RMSEA = .190, CFI = .887, SRMR = .053



### Modified hypothesized model

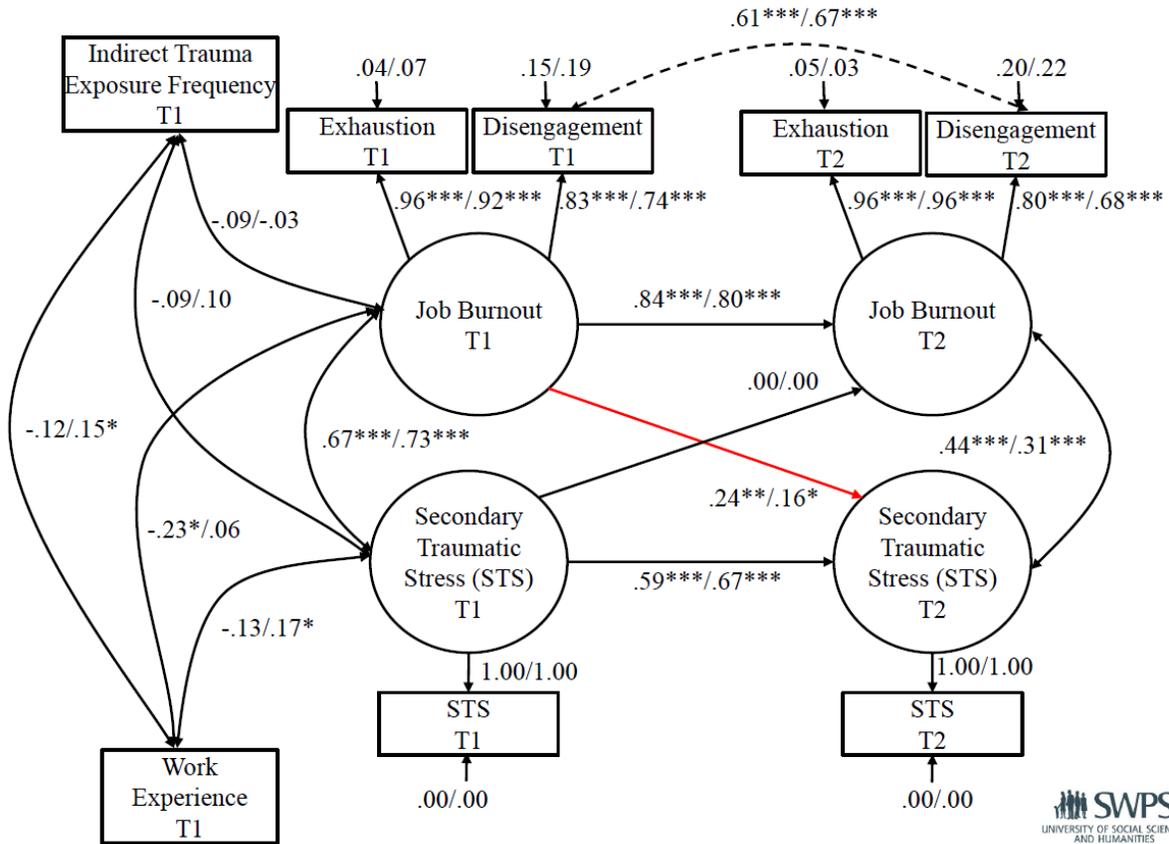
Study 1: RMSEA = .074, CFI = .986, SRMR = .041.  
Study 2: RMSEA = .027, CFI = .998, SRMR = .026



## Nested models

Study	Model Description	$\chi^2$	$\chi^2/df$	NFI	$\Delta\chi^2$	$\Delta NFI$
Study 1 						
	The modified hypothesized model	20.90	1.74	.969	-	-
	First nested model: STS T1 → Job Burnout T2 path constrained to zero	21.77	1.68	.968	0.88	.001
	Second nested model: Job Burnout T1 → STS T2 path constrained to zero	28.09	2.16	.959	7.19**	.011
Study 2 						
	The modified hypothesized model	13.70	1.14	.984	-	-
	First nested model: STS T1 → Job Burnout T2 path constrained to zero	14.43	1.11	.983	0.74	.001
	Second nested model: Job Burnout T1 → STS T2 path constrained to zero	17.69	1.36	.979	3.99*	.005

## Final model



## Conclusions

- We found that **job burnout may increase a risk of developing STS**, but STS symptoms at Time 1 are unrelated to job burnout at Time 2 (Hypothesis #1 was supported. Unidirectional relationship: JB → STS)
- Job burnout serves as a **gateway outcome**, increasing the risk of STS (results are in line with Hobfoll's conservation of resources theory)
- **Consistent findings** across two samples
- Limited arguments for causation (→ natural experiments/interventions studies needed)
- Limited evidence for generalization of the results (→ other culturally diverse groups needed)
- Practical implications: prevention of STS through effective coping with job burnout

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Thank you

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Appendix 31



University of Colorado  
Colorado Springs

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## SupportNet:

### Helping Those Who Help Our Military







**Brief Summary:** SupportNet was a project in the Trauma, Health, & Hazards Center (THHC) at University of Colorado Colorado Springs (UCCS) designed to assess the level of secondary trauma and burnout among military behavioral health providers and to provide a pilot support system for the providers. It was funded by a 4-year grant through the US Army Medical Research and Materiel Command, Telemedicine & Advanced Technology Research Center (TATRC; Award No. W81XWH-11-2-0153). There were 2 phases to this project. The first phase was a longitudinal study of behavioral health providers both on- and off-post. The phase 1 results suggest that approximately 20% to 25% of providers are struggling with symptoms of secondary traumatic stress (STS) and burnout. A comprehensive self-care goal setting web-support system utilizing a social media based platform was designed to reduce burnout in military behavioral health clinicians. The web-based support system was based on social cognitive theory focused on personal empowerment and social support enhancement. This was coupled with peer coaching by a behavioral health clinician to maximize the utility of the website. The following report provides a review of the most critical findings from our project. We hope the findings are useful for future planning in behavioral health divisions to help reduce the negative personal and organizational effects of STS and burnout. We believe this is a first step in developing comprehensive programming for these issues to support our teams of military behavioral health providers working with active and retired military personnel struggling with the after effects of war.





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We define STS as reactions resembling post-traumatic stress, such as intrusive re-experiencing of the traumatic material, avoidance of trauma triggers and emotions, and increased arousal, all resulting from indirect exposure to trauma. Recently, the American Psychiatric Association acknowledged this similarity and modified the diagnostic criteria for posttraumatic stress disorder. In the DSM-IV TR (American Psychiatric Association, 2000), direct exposure to trauma was required, but in



the DSM-5 (American Psychiatric Association, 2013), indirect exposure is now included under some circumstances, such as the indirect exposure experienced by behavioral health providers. With this change, it is now possible to diagnose some behavioral health providers, who are experiencing STS, with PTSD. STS prevalence rates differ across occupation groups; for example, criteria for a PTSD-like diagnosis of STS were met by

15.2% of social workers (Bride, 2007), 16.3% of oncology staff (Quinal, Harford, & Rutledge, 2009), 19% of substance abuse counselors (Bride, Hatcher, & Humble, 2009), 20.78% of providers treating family or sexual violence (Choi, 2011a), 32.8% of emergency nurses (Dominguez-Gomez & Rutledge, 2009), 34% of child protective services workers (Bride, Jones, & Macmaster, 2007), and 39% of juvenile justice education workers (Smith Hatcher, Bride, Oh, Moultrie King, & Franklin Catrett, 2011). Craig and Sprang (2010) found 6% of a national representative sample of clinical

psychologists and clinical social workers reported high levels of compassion fatigue and 12% reported elevated levels of job burnout. Before our work, there was no estimation of prevalence of STS or burnout among behavioral health specialists providing treatment for military and veteran patients. STS and job burnout can substantially impinge on



behavioral health providers' clinical effectiveness, increase turnover, elevate health care costs, and reduce overall morale. The military's commitment to military force health protection and overall warrior readiness requires these issues be addressed.

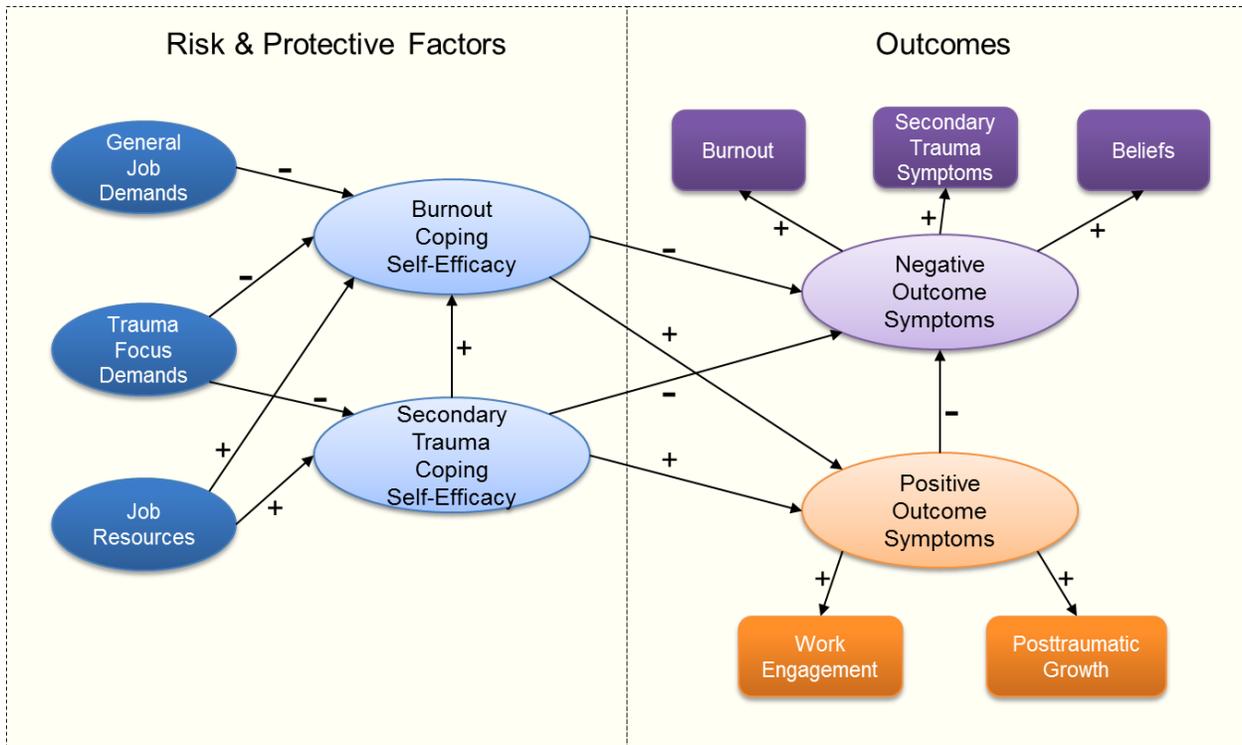
### The SupportNet Response

Our project, SupportNet, was designed to identify and address these caregiver risks to military behavioral health providers. This research, a \$2.4M grant funded through *Telemedicine and Advanced Technology Research Center (TATRC; Award No. W81XWH-11-2-0153)*, focused on STS and burnout. It included an extensive theoretically driven research effort to understand STS and burnout within this population as well as an innovative, evidence-based approach leveraging technology to help providers.



- There were two phases for this project:
  - Theoretically driven prevalence evaluation: longitudinal study that identified the rates of secondary trauma and burnout.
  - Intervention: Development of sophisticated social media based website that provided critical resources for providers, self-care goal setting, and relational support to enhance empowerment. Detailed peer coaching model to compliment web-support system.

## Our Model: Demands-Resources Guided Through Self-Regulation



For our studies we utilized a modified demands and resource model for understanding burnout, STS and wellness (Demerouti & Bakker, 2011) in military behavioral health providers. We included a self-regulation approach using social cognitive theory (SCT) as a guiding theory to integrate the demands and resources within the model (see Figure 1). Job demands refer to those aspects of the job that require effort or skills and therefore lead to some physiological and psychological costs. Job resources relate to components of the job that are helpful in (a) achieving work-related goals, (b) reducing job demands and costs associated with these demands, and (c) stimulating personal development (Demerouti & Bakker, 2011). Through health impairment and motivational processes, job demands and resources directly, or in interaction with each other, affect job burnout, STS, and ultimately work engagement, work satisfaction, and health/wellbeing. The JD-R model shows that from organizational and individual perspectives it is important to know what factors lead to a negative outcome (e.g., job burnout and STS) as well as positive outcomes (e.g., work engagement, job satisfaction, wellbeing).

*The Job Demands-Resources (JD-R) model is currently the most influential theoretical approach to understand job burnout.*

The self-regulation approach using social cognitive theory (SCT) suggests that a demand becomes stressful when there is a lack of adequate resources to deal with this demand (Hobfoll, 1989, Lazarus & Folkman, 1984; Schaufeli, Taris, & Van Rhenen, 2008) and human beings utilize self-regulation as a way to manage this imbalance. In the context of a model of self-regulation based on the demand-resource balance, self-efficacy beliefs are pivotal to successful or unsuccessful coping. Our model also views social/environmental resources specifically social support, as a key factor that combines with self-efficacy to enhance or impede successful coping. Based on this model we designed a longitudinal investigation of behavioral health providers that would provide the following information.



*Social cognitive theory suggests that interactive and dynamic processes between environmental conditions (e.g., social support, workload) and individual factors (e.g., self-efficacy, trauma exposure), can more comprehensively explain the relationship between demands-resources and related outcomes (e.g., burnout).*

- 1. What is the prevalence of STS and burnout in these providers?**
- 2. What key factors predict negative and positive outcomes over time?**
- 3. What is the inter-relationship between STS and burnout (i.e., which comes first)?**

## Prevalence Results: Secondary Traumatic Stress

This study was part of the ongoing SupportNet Project designed to evaluate indirect exposure to trauma, work-related demands and resources, and their impact on job burnout, work engagement, and STS in military mental health providers. Data were collected by means of an online survey. An e-mail with information about the SupportNet study and a link to the survey was sent to on-post and off-post behavioral health providers working with military patients. The off-post providers (i.e., located in the civilian community) received an invitation to the study through an online newsletter sent by TriWest Healthcare Alliance, an organization that manages health benefits for military patients and their families. The on-post providers (i.e., working within military installations) were contacted by e-mail sent by the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, CO and by the Psychology Consultant to the U.S. Army Surgeon General<sup>1</sup>. Thus, our sample included providers from across the globe.

### Demographics of our participants:

- Out of the 339 individuals who initially consented to the study, 224 (66%) met the inclusion criteria (i.e., working at least one year as a clinical psychologist, counselor, or social worker; providing services for a military population; and being indirectly exposed to trauma through work with patients) and completed the survey.
- The average age was just under 50 years old ( $SD = 13.04$ ) and the average length of work experience was slightly over 16 ( $SD = 10.42$ ) years.
- The participants were mostly women (67%), with doctorate (54%) or master's degrees (46%), working fulltime (78%) or part-time (22%) as clinical psychologists (45%), counselors (31%) or social workers (23%).
- A little more than half of the sample was serving on-post (57%) and the rest as off-post (43%) behavioral health providers.
- Interestingly, we had just about an equal split between those who did and those who did not have any military experience (44% and 56%, respectively).
- Importantly, about 20% had deployed to a combat zone at least once.

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<sup>1</sup> We would like to offer special thanks to several military partners who were instrumental in our success: Alan L. Peterson, Ph.D. Bret A. Moore, Psy.D., COL Crow, Psy.D.. and COL Earles, Psy.D.

- The providers reported utilizing a mixture of different therapeutic approaches with most reporting Cognitive Behavioral Therapy (90%), followed by Cognitive Processing Therapy (42%), Prolonged Exposure (30%) and Eye Movement Desensitization and Reprocessing (29%).

Table 1 depicts the different percentages of STS symptoms that were reported for each cluster. Over half of the sample reported experiencing intrusions or re-experiencing related to their indirect exposure. Just over one-third reported meeting the criteria for hyper-arousal (2 or more of the symptoms). Importantly just under 20% met all of the criteria for a diagnosis of PTSD.

Table 1: *Secondary Traumatic Stress Criteria Due to an Indirect Trauma Exposure through a Practice with Traumatized Military Patients*

Criteria	<i>n</i>	%
None criteria met	76	33.9
Criterion B: Intrusion	129	57.6
Criterion C: Avoidance	67	29.9
Criterion D: Arousal	79	35.3
Criteria B and C	53	23.7
Criteria B and D	66	29.5
Criteria C and D	51	22.8
Criteria B, C, and D	43	19.2

Approximately 25% of our sample showed higher levels of STS. Interestingly, more STS was reported by off post providers than on-post. To put these rates into context we conducted a meta-analysis of all health care providers and determined the overall levels of STS in these populations for a comparison.

## Meta-analysis of STS

To understand the prevalence of STS in military behavioral health providers, it was important to look at other caregiver populations. We conducted a meta-analysis that demonstrates military behavioral health providers are very similar to other mental health providers based on their STS scores. Interestingly, our overall total score for all military behavioral health providers (31.91) was about the same as substance abuse counselors (31.20), providers for survivors of family or sexual violence (32.07), and social workers in general (29.69). These scores are lower when compared to child protective services workers who demonstrate the highest scores (38.20) (Cieslak, R., Anderson, V., Bock, J., Moore, B., Peterson, A., & Benight, C. C., 2013). Collectively, our findings suggested that approximately 25% of providers will demonstrate elevated levels STS and those off post will show higher levels than those on-post. The reason for this may be due to the organizational support/structure offered as an on-post provider compared to working in a community setting. In addition, the opportunity to provide trauma focused therapies may be differential due to work-load challenges and other factors leading to differential exposure to traumatic material over time. Obviously, one cannot rule out selection differences for providers who work on-post versus off-post that may lead to differential levels of STS symptoms. The next question we wanted to answer was: what were the predictors of STS in this population to help develop strategic planning related to prevention.

### Take Home Message on Secondary Traumatic Stress and STS Predictors

In determining the predictors of STS in our sample we discovered that history of direct exposure to trauma is important, as is the level of trauma patients that the provider is managing. We also found that having a negative perspective on being exposed to traumatic material from clients was also important to consider. One might view these three factors as the therapist's "trauma load". Thus, providers who carry this load into seeing large numbers of soldiers suffering from combat related trauma are at risk for higher STS. Educational efforts for providers related to these issues and self-surveillance of STS symptoms (particularly intrusions and hyper-arousal) may help identify those who need greater support.

---

***Take Home Message on Secondary Traumatic Stress and STS Predictors:***

- *Expect approximately 20% to 25% to have some STS symptoms.*
- *Intrusions and Hyper-arousal are most common.*
- *History of direct exposure to trauma is important.*
- *Overloaded with trauma patients.*
- *Negative perspective on indirect exposure.*

In addition to STS, we were very interested in the level and predictors of burnout in this population. The next section provides details on prevalence levels of burnout as well as predictors.

## Prevalence Results: Job Burnout

The negative impact of burnout is substantial, especially in human services professionals. In mental health, Lasalvia et al. (2009) found that burnout substantially contributed to decreased effectiveness and poor treatment outcomes. Burnout has also been associated with more frequent voluntary and involuntary hospital admissions, as well as more negative attitudes towards patients (Holmqvist & Jeanneau, 2006; Priebe, 2004). Decreased commitment to the organization, absenteeism, presenteeism (present, but inefficacious) and turnover have also been associated with higher burnout levels (Burke & Richardsen, 2001; Morse, Salyers, Rollins, Monroe-DeVita, & Pfahler, 2012). High turnover and absenteeism are very costly to organizations and highly demoralizing to providers observing this process. This can become cyclical with turnover promoting further turnover significantly increasing costs associated with recruiting and training new providers (Taris, 2006). For the military the



implications here are significant with the combination of having both civilian providers and career military providers offering differential opportunities for leaving the organization. Beyond the patient care and organizational costs, higher levels of burnout can inflict high personal tolls on providers themselves. Burnout can contribute to developing diseases of the circulatory, respiratory and musculoskeletal systems (Mancini et al., 2015; Rollins, Salyers, Tsai, & Lydick, 2009). For the sake of mental health providers working for the military and especially for the well-being of returning soldiers, we utilized the demands resource model again to help understand burnout in this population.

Our study found that overall (on-post and off-post providers) reported on average low to moderate amounts of burnout. Figure 1 provides the distribution of burnout scores reported by behavioral health providers working with military clients. Respondents indicated, on average, moderate amounts of overall burnout ( $M = 2.59$ ,  $SD = .67$ ), emotional exhaustion ( $M = 2.68$ ,  $SD = .72$ ) and disengagement ( $M = 2.49$ ,  $SD = .72$ ) on a scale that ranges from 1 = no burnout to 5 = high burnout. One can see in Figure 1 that **around 17% of the sample reported higher levels of burnout.**

Interestingly, we found that **individuals who had prior military experience and had been previously deployed had higher emotional exhaustion** than did those without this experience. Similarly, providers who were **male, working at a military installation, had prior military experience, and been previously deployed had significantly higher disengagement levels** than did women who were working

off-post, had no previous military experience, and had never been deployed. Finally, somewhat surprisingly, those with a doctoral level degree reported significantly higher overall burnout.

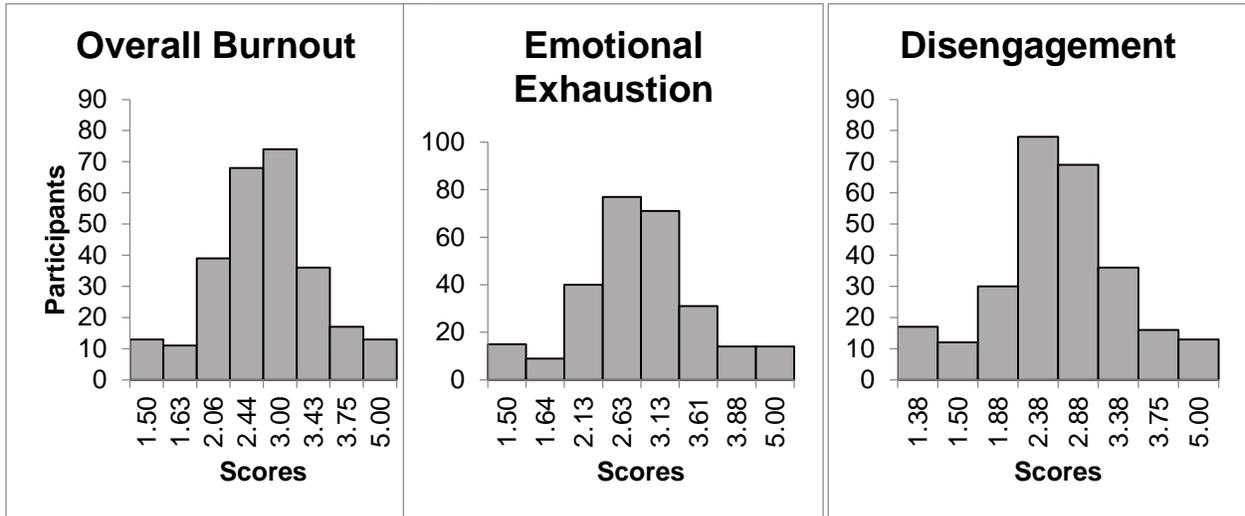
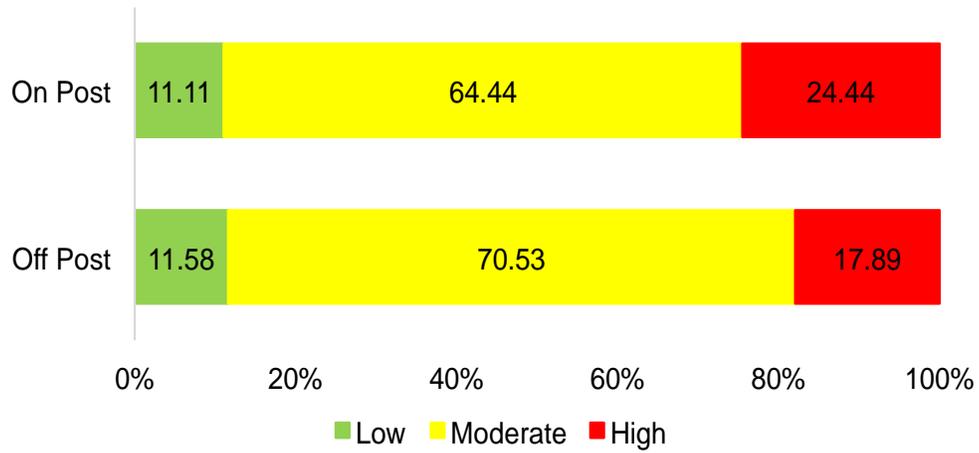


Figure 1. Histogram of overall prevalence scores are based upon percentages

We found significantly **higher levels of burnout overall and for disengagement more specifically in on-post providers compared to off-post** ( $F(1,274) = 4.87, p = .028$ ,  $F(1,274) = 6.93, p = .024$ , respectively).

The next set of figures demonstrates the differences between on-post and off-post providers. Figure 2 shows that on-post individuals are showing higher levels of overall burnout than off-post therapists.

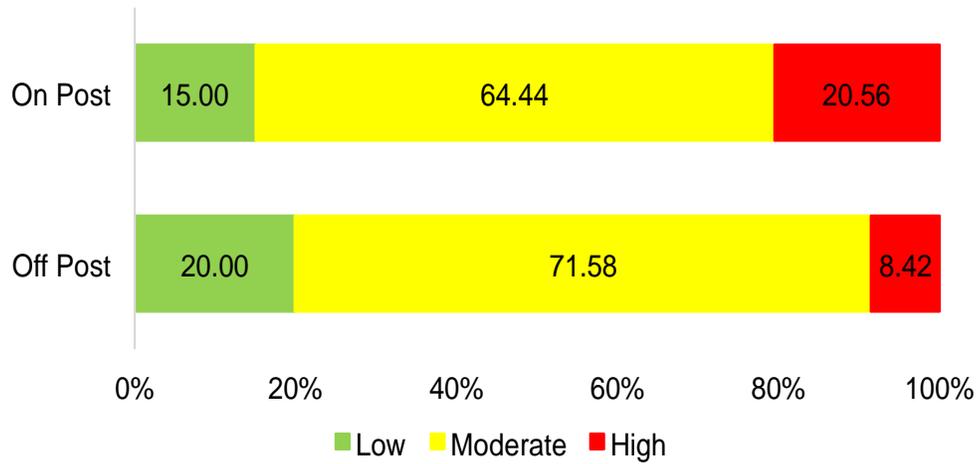


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**Figure 2: Prevalence Results: Overall Burnout**

Scale 1 (low) to 5 (high)  
Low cut off score = 1.84, High cut off score = 3.22  
On Post N = 95, Off Post N = 180

This is particularly evident for the exhaustion subscale. Figure 3 shows that on-post providers are showing over 2x the level of exhaustion than off-post therapists.

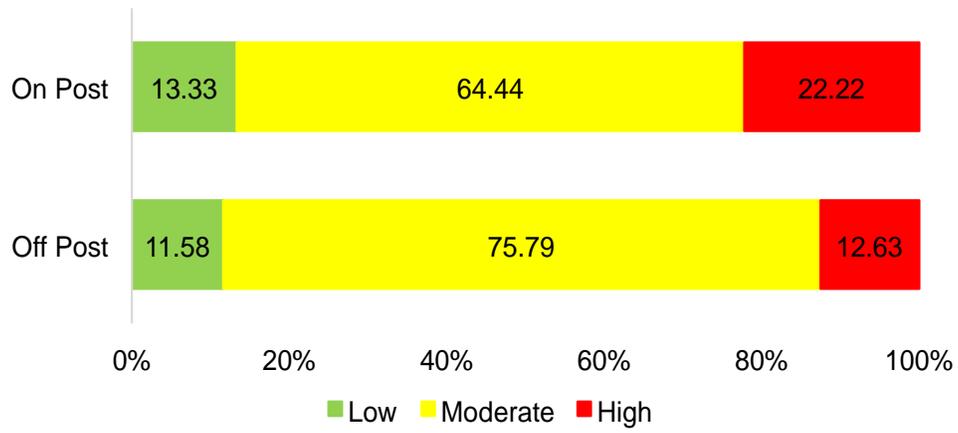


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**Figure 3: Prevalence Results: Exhaustion**

Scale 1 (low) to 5 (high)  
Low cut off score = 1.84, High cut off score = 3.22  
On Post N = 95, Off Post N = 180

You can see that only about 8% of off-post individuals were reporting elevated levels of exhaustion compared with about 20% for on-post providers. Although the overall mean differences were not statistically significant, it does suggest a larger percentage of providers on-post reporting more exhaustion. There was a significant difference for depersonalization (i.e., disengagement from one's patients). Figure 4 demonstrates this effect.



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**Figure 4: Prevalence Results: Depersonalization**

Scale 1 (low) to 5 (high)  
Low cut off score = 1.84, High cut off score = 3.22  
On Post N = 95, Off Post N = 180

In order to develop some ideas related to prevention we evaluated predictors of burnout as well. We

---

***Take Home Message on Burnout and Burnout Predictors:***

- *Expect approximately 17% to 20% to have elevated burnout symptoms.*
- *Higher percentage of burnout in on-post providers, emphasis on disengagement.*
- *Organizational constraints and workload significant predictors of greater burnout.*
- *Enhanced self-efficacy for managing work related demands related to reduced burnout symptoms.*
- *Military experience and deployment may have greater levels of burnout.*

found that a **higher level of organizational constraints was a significant predictor of higher burnout**. Specific to the symptom of emotional exhaustion we found **that higher organizational constraints and higher quantitative workload were important**. Lower levels of emotional exhaustion were related to **higher work demands efficacy, higher work resources management self-efficacy and higher burnout symptom management self-efficacy**. In addition, **having higher work resources management self-efficacy and higher burnout symptom management self-efficacy were significant predictors of lower disengagement**.

These findings are relatively consistent with other research in this area. Ballenger-Browning et al. (2011) reported in Military Medicine on predictors of burnout among military mental health providers. They found that hours worked was a significant predictor of emotional exhaustion, as was being female and being a psychiatrist. Having personality disordered clients and those with traumatic head injuries were predictive of higher depersonalization (i.e., disengagement).

### Phase One Summary

Overall our phase one findings suggest that a subset of military mental health providers do report significant STS and burnout. Both personal factors (e.g., self-efficacy perceptions, trauma history) and environmental conditions (e.g., social support, organizational constraints, workload) are important to consider in prevention or intervention programming. Our group has published a series of papers that may be of interest to the reader. They include:

- Shoji, K., Lesnierowska, M., Smoktunowicz, E., Bock, J., Luszczynska, A., Benight, C. C., & Cieslak, R. (in press). What comes first, job burnout or

secondary traumatic stress? Findings from two longitudinal studies from the U.S. and Poland. *PLOS ONE*

- Smoktunowicz, E., Baka, L., Cieslak, R., Nichols, C. F., Benight, C.C., & Luszczynska, A. (in press). Explaining Counterproductive Work Behaviors Among Police Officers: The Indirect Effects of Job Demands are Mediated by Burnout and Moderated by Job Control and Social Support. *Human Performance*.
- Shoji, K., Bock, J., Cieslak, R., Zukowska, K., Luszczynska, A., & Benight, C. C. (2014). Cultivating secondary traumatic growth among healthcare workers: The role of social support and self-efficacy. *Journal of Clinical Psychology*, 70, 831-846. doi:10.1002/jclp.22070
- Cieslak, R., Anderson, V., Bock, J., Moore, B., Peterson, A., & Benight, C. C. (2013). Secondary traumatic stress among mental health providers working with the military: Prevalence and its work- and exposure related correlates. *Journal of Nervous and Mental Disease*, 201(11), 917-925.
- Cieslak, R., Shoji, K., Douglas, A., Melville, E., Luszczynska, A., & Benight, C. C. (2013). A meta-analysis of the relationship between job burnout and secondary traumatic stress among workers with indirect exposure to trauma. *Psychological Services*. Advance online publication. doi:10.1037/a0033793
- Cieslak, R., Shoji, K., Luszczynska, A., Taylor, S., Rogala, A., & Benight, C. C. (2013). Secondary trauma self-efficacy: Concept and its measurement. *Psychological Assessment*, 25, 917–928. doi:10.1037/a0032687

## SupportNet Intervention Randomized Clinical Trial (RCT)

In developing the intervention we decided to focus on a pragmatic and scalable approach that combined a web-based self-care program with one-on-one peer coaching. The website was called SupportNet and offered many unique features. The site was designed to enhance social support through a social media based platform. Users were able to create a network of support where they could receive direct assistance in reaching their self-care goals as well as helping others in their network with their

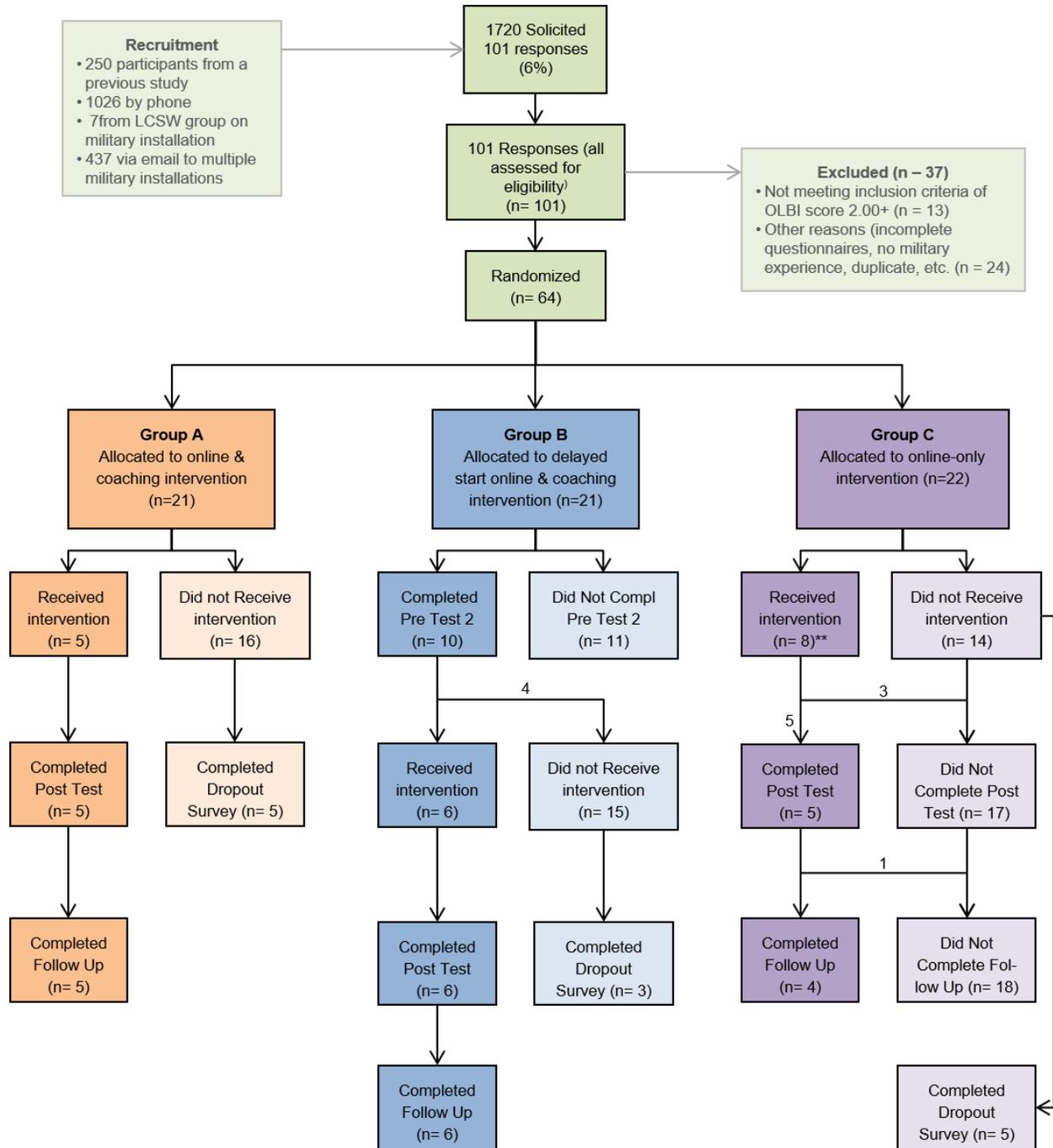


goals. In addition, “quick take 5” self-care skills were offered including quick breathing techniques or mindfulness exercises. A resource library was also included that provided up to date information on evidence based interventions for traumatic stress offered in an easy to digest format. To help providers boost their self-efficacy the site offered a user friendly goal setting system designed to assist with specificity of the goal, how to measure success, and the importance of rewards. A targeted specific goal was determined along with when, where, and with whom the person would complete the goal. Goal achievability was emphasized in order to maximize the opportunity for success, given the importance of mastery in enhancing self-efficacy (Bandura, 1997). The website offered the ability to not only set specific goals, but to also track progress toward the goal.

The coaching process included providing education about burnout, assisting providers in setting self-care goals to increase coping self-efficacy, and supporting the participants in reaching those goals through utilization of the website. Coaching has been used to effectively address occupational stress and burnout (Biswas-Diener, 2009; Gazelle, Liebschutz, & Riess, 2014). Specifically, goal-focused coaching has been found to be an effective method of facilitating behavioral change (Grant, 2012).

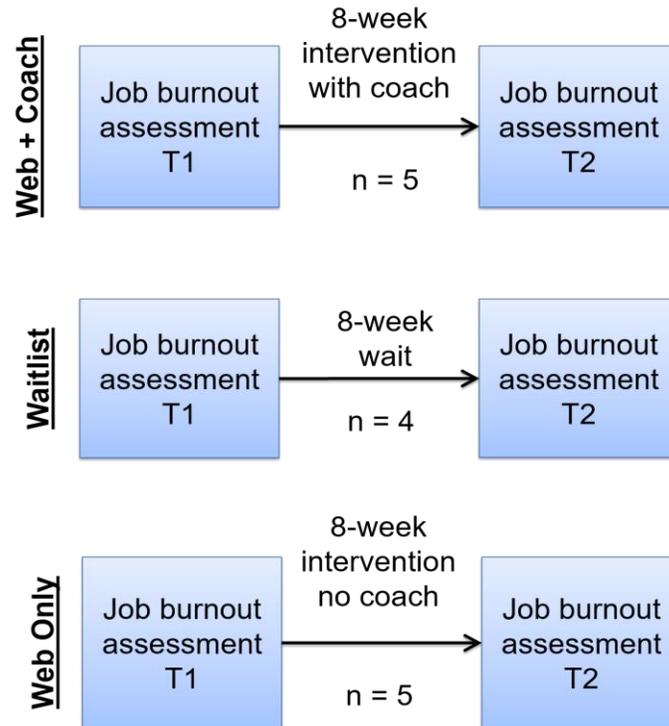


## RCT: Completion, Withdrawn, Dropouts



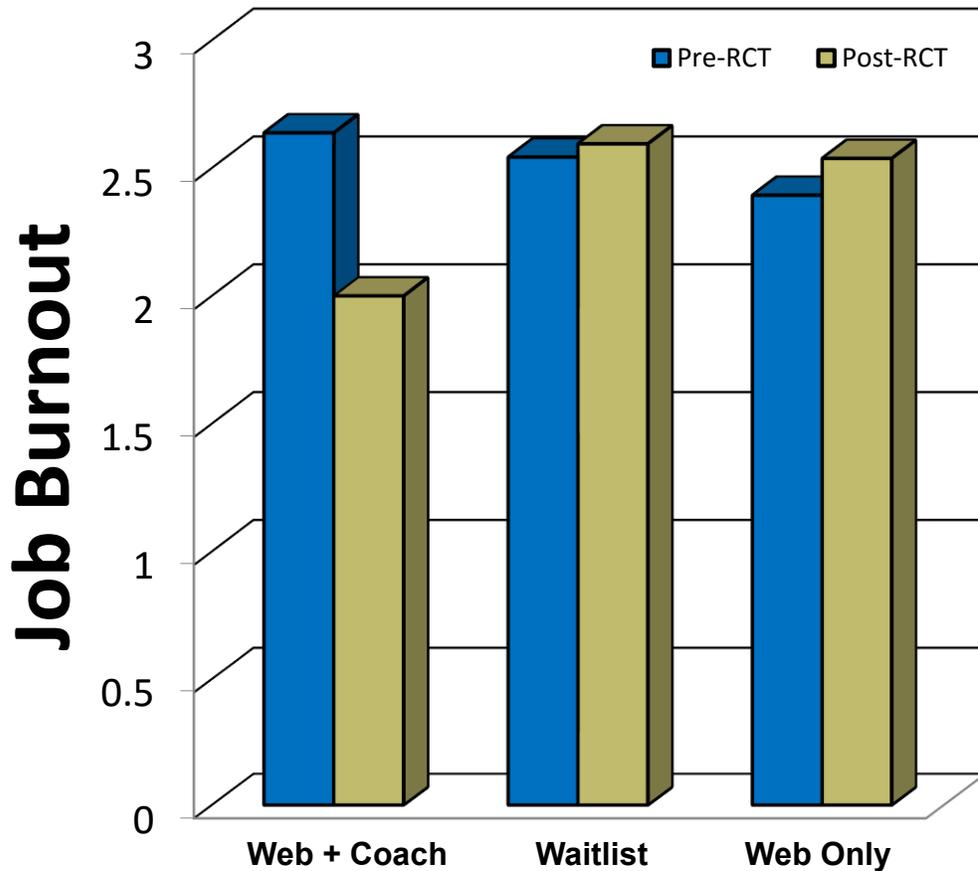
RCT Method

14 behavioral health providers working with US military were randomly assigned to one of three groups. A 2 month follow-up assessment was conducted following the 8-week post-test.



## RCT Results

Randomized trials have two different ways to analyze the data. Either an intent-to-treat or completer analysis can be performed. The intent-to-treat method is more conservative. We found a significant Interaction Effect between Group and Time on Job Burnout for Intent-to-Treat Analysis for pre to post-outcomes.



Note.  $F(2, 11) = 6.97, p = 0.01, \eta^2 = .56$ .

The Web + Coach group had a significant difference between pre- and post-test scores for burnout. A completer analyses (only those who completed the intervention) demonstrated even stronger effects. Scheffé's planned follow-up comparisons indicated that exhaustion was significantly lower at post-test and at 2 month follow-up than at pre-test among the coached/delayed group.

Overall results suggest the web-support system plus coaching may be effective in reducing aspects of burnout at post-test and at follow-up. Because we did not include a coaching without web-support there is no way to tease apart the importance of the web in the intervention. However, our coaches suggested that the use of the website was driven by the coaching sessions and that the participants did utilize the system. Meta-analytic results evaluating burnout interventions in psychological and medical health providers suggested similar, albeit slightly lower, effect sizes relative to our findings. Results provide preliminary support for reducing burnout in these providers through the use of a web-based support system that is designed to enhance self-efficacy and social support when it is combined with coaching. Our investigation also demonstrated the difficulties of conducting intervention research with mental health providers who are stressed and experiencing some level of burnout; participating in a study was one more thing that many chose not to add despite the benefits it could offer. However, this is the first RCT that we are aware of for any intervention for military behavioral health providers to help reduce burnout and provides at least an initial finding that a peer coaching model with web-support may be beneficial. Future studies utilizing our system and our coaching method are needed to confirm the benefits of this approach.

### Final SupportNet Takeaways

- The web system designed to enhance self-care within a supportive cyber environment + peer coaching intervention may be helpful in addressing burnout in military behavioral health providers.
- Importance of the issue: Job burnout and STS potentially increase turnover and impair performance among mental health providers. About 20% to 25% of providers will be struggling with some STS and burnout symptoms.
- Elevated negative clinical outcomes (e.g., STS or Burnout or both) possibly influencing mission readiness for soldiers.

- Important differences possibly between on-post and off-post environments relating to STS and burnout.
- Targeting job burnout may be an effective approach to prevent STS based on findings from our recent paper where burnout precedes STS in our sample (see most recent paper in Plos One (Shoji et al., in press).
- Job burnout and STS need to be addressed through both individual (e.g., self-efficacy) and organizational approaches (work load and organizational constraints).
- Finally, it is no surprise that clinicians experiencing burnout and STS are very difficult to engage in research making scientific evaluation of interventions difficult. Future studies are needed.

Interested in the SupportNet Intervention:

If you would like further information about our intervention (website plus coaching plan) please contact Dr. Benight at (719) 255-4180.

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## Appendix

### Trauma, Health, and Hazards Center

*The mission of the Trauma Health & Hazards center (THHC) is to reduce the impact of extreme human events. This will be accomplished through social science cross-disciplinary scholarship, scientifically informed policy directives, and select educational initiatives across the spectrum of extreme human adversity (i.e., terrorist attacks, natural disasters, mass violence). The Center is uniquely positioned to provide cutting edge research, decision support, and innovation to an array of critical concerns important to both individual and collective adaptation.*

*The Center's faculty provide a unique combination of scientists from a variety of disciplines including Psychology, Geography, Climatography, Public Health, Political Science, Sociology, and Information Technology focused on the human behavioral dimension related to prevention, mitigation, and recovery from adversities that test the limits of human adaptation. Through these collaborative efforts the Center strives to reduce the effects of traumatic stress exposure, improve health, and enhance overall approaches to human hazards.*

*The THHC will work in collaboration with a variety of both private and public constituents dedicated to improving homeland and human security following extreme events. These constituents include but are not limited to: a) university departments, b) university centers, c) military, d) industry, e) homeland security and homeland defense government agencies, and f) non-governmental organizations. The Center will work with these and other entities to generate research agendas, conduct research, share information collected to increase application implementation, and provide expertise in human behavioral response as needed.*

*There are several branches to the Trauma, Health & Hazards Center:*

- *Veterans Health and Trauma Clinic*
- *Research*
- *Training and Education*

**Veterans Health and Trauma Clinic (VHTC):**

- Our mission is to support the wellness and mental/behavioral health needs in our military and civilian communities with integrated, evidence-based services.
- Who Do We Serve?
  - Anyone interested in wellness-focused trauma care
  - Active Duty, Veteran and Retired Military Members & Military Families; Non-military Community
  - Survivors of physical, psychological, sexual, & combat trauma
  - Individuals experiencing stress, anxiety, or depression
  - Secondary Trauma Survivors
  - Natural Disaster Survivors
  - First Responders
  - Specialization in Eating Disorders/Trauma
- What makes us integrated?
  - Uniquely positioned in the community to coordinate care with the client, the client's family, Lane Center clinics (nutrition, exercise, medical care) and other community partners

Research:

The THHC has a number of active research studies. A more comprehensive list can be found at: [www.uccs.edu/thhc](http://www.uccs.edu/thhc).

- **EASE Study:** This NSF funded study aims at building a smart system that empowers individuals who are suffering from traumatic experiences by combining sensing and machine learning to improve treatment. Our goal is to develop a web-based intervention that automatically adjusts to user's responses to provide the most optimal service depending on user's emotional and physiological states. It is funded by the 4-year Smart and Connected Health grant through the National Science Foundation.

Training and Education:

- **Ph.D. in Clinical Psychology with curricular emphasis in Trauma Psychology:** The Clinical Psychology Ph.D. program at the University of Colorado Colorado Springs is an APA accredited program that is built on the Boulder Scientist/Practitioner Model. The program has been accredited since 2007 and has full accreditation through 2019. A curricular focus in Trauma Psychology was approved in 2014 (<http://www.uccs.edu/psych/graduate/phd-program/phd-clinical-psychology-trauma.html>). Applications are due by December 1, 2017, and the third class in the Clinical Psychology Ph.D. program with curricular emphasis in Trauma Psychology will matriculate in Fall, 2017. This emphasis is designed to train students who have a particular interest in conducting research and working clinically with traumatized individuals.
  - The Trauma, Health & Hazards Center is pleased to support this program with financial, research and other infrastructure support for students and faculty. The Veterans Health and Trauma Clinic (<http://www.uccs.edu/healthcircle/veterans-health-and-trauma-clinic.html>), the mental health clinic under the auspices of the THHC, will serve as the primary clinical training site for students in their second and third years of the Ph.D. program.
- **Peer Support Program Services:** A preventive peer support program that trains volunteer first responders in basic counseling skills and gives them the knowledge they need to identify individuals with posttraumatic difficulties and guide them to seek appropriate treatment. The CU Trauma, Health, and Hazards Center provides a variety of services designed to build awareness among all first responder department personnel, cultivate and train new peer supporters, and provide ongoing training and consultation with existing peer supporters. These services are highlighted below.



## From Exhaustion to Disengagement via Self-Efficacy Change: Findings from Two Longitudinal Studies among Human Services Workers

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This longitudinal research examined the relationship direction between burnout components (exhaustion and disengagement) within the context of personal resources measured by self-efficacy and social support. In line with the conservation of resources theory we hypothesized that exhaustion may trigger a spiral loss of personal resources where self-efficacy declines and subsequently, social support also declines and in turn predict disengagement. Participants in Study 1 were mental healthcare providers ( $N = 135$ ) working with U.S. military personnel suffering from trauma. Participants in Study 2 were healthcare providers, social workers, and other human services professionals ( $N = 150$ ) providing various types of services for civilian trauma survivors in Poland. Baseline and 6-month follow-up measurements included burnout components, burnout self-efficacy and perceived social support. The path analysis showed consistent results for both longitudinal studies; exhaustion measured at Time 1 led to disengagement at Time 2, after controlling for baseline disengagement levels. Across Study 1 and Study 2 these associations were mediated by self-efficacy change: Higher exhaustion led to greater decline in self-efficacy which in turn explained higher disengagement at the follow-up. Social support, however, did not mediate between self-efficacy and disengagement. These mediating effects were invariant across Studies 1 and 2, although the mean levels of burnout and personal resources differed significantly. The results contribute to a discussion on the internal structure of job burnout and a broader understanding of the associations between exhaustion and disengagement that may be explained by the underlying mechanism of change in self-efficacy.

**Keywords:** burnout, exhaustion, disengagement, self-efficacy, social support

### INTRODUCTION

Job burnout has recognized as one of the key consequences of job stress (Maslach et al., 2001). Its high prevalence was documented across occupational groups of human service workers, reaching up to 67% for burnout in a community of mental health workers (Holtmann et al., 2012). Predictors of burnout and co-occurring mental health problems have been thoroughly investigated (Maslach and Leiter, 2009; Leiter et al., 2013; Cieslak et al., 2014). However, only a few studies have examined

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the causal relationships among burnout components (Tait et al., 2005). Our study aims to fill this gap by examining the effects of exhaustion on disengagement, but one component of burnout. The effects of exhaustion on disengagement will be evaluated further in the context of potential indirect pathways through personal resources (i.e., self-efficacy and social support; Schwabach and Knoll, 2007).

Traditionally, burnout has been conceptualized as prolonged responses to chronic emotional and interpersonal stressors that occur in the work setting (Maslach et al., 2001). The three original components of burnout proposed by Maslach et al. (2001) are (1) emotional exhaustion; the feeling of being overtaxed and depleted of emotional and physical resources, (2) depersonalization; a negative and cynical attitude toward people, and (3) reduced personal accomplishment; the tendency to evaluate one's work negatively and diminish one's own achievements. In the process of generalizing burnout to professions observed in occupations other than human services, the original name of the burnout component was changed (Maslach et al., 2001). In particular, emotional exhaustion became exhaustion, depersonalization was replaced with cynicism, and reduced personal accomplishment was replaced with lack of professional efficacy. Ramach confirmed that the three components of burnout were interrelated (Lee and Ashforth, 1996; Tait et al., 2005; Houcke et al., 2011).

As a general model of burnout, exhaustion is one of its key facets. For example, Mohamed et al. (2008) viewed burnout as a multidimensional construct consisting of emotional exhaustion, physical fatigue, and cognitive weariness. Other approaches suggested that burnout might be reduced to a single common experience of exhaustion (cf. Kristensen et al., 2005; Maltch-Yin et al., 2005).

Yet another prominent model of burnout (Demerouti et al., 2001) assumed only two components, exhaustion and disengagement. In this model, exhaustion accounts not only for affective, but also physical and cognitive aspects (Demerouti et al., 2001). Disengagement reflects both withdrawing oneself from work and creating negative attitudes toward one's work. Thus, disengagement is broader than depersonalization in that it refers to attitudes toward the work as well as the relational elements such as engagement in work tasks or identification with one's work (Demerouti et al., 2001). Following this new conceptualization of exhaustion and disengagement, an alternative source of job burnout was proposed (cf. Oldenburg, Burnout Inventory, CIBI; Halbesleben and Demerouti, 2005).

Dropping the personal accomplishment component is in line with theoretical developments (cf. Demerouti et al., 2001) and meta-analyses pointing out that this concept may be difficult to distinguish from other constructs, such as self-efficacy (Cordes and Dougherty, 1993; Shoji et al., 2015). It has also been argued that the personal accomplishment component develops to a great extent independently from exhaustion and disengagement (Lee and Ashforth, 1993; Tait et al., 2005). Importantly, the independence of self-efficacy and personal accomplishment may be questionable (Cordes and Dougherty, 1993). A recent meta-analysis of 57 studies confirmed that compared to other burnout dimensions, personal

accomplishment forms the strongest relationship with self-efficacy (Shoji et al., 2015).

Understanding the interplay between burnout components is also critically important to consider. Three different models have been proposed. First, Demerouti et al. (2001) indicated that exhaustion is a consequence of prolonged physical, affective, and cognitive work stress. Although, Demerouti et al. (2001) suggested that exhaustion and disengagement are not causally related, they assumed that exhaustion may develop faster than disengagement because of higher individual sensitivity to job demands. In contrast, Leibe and Maslach (1998) argued in their process model that chronic job stress leads to emotional exhaustion, which in turn causes depersonalization. Thus, prolonged feelings of depersonalization may in turn result in reduced personal accomplishment. In comparison, Lee and Ashforth (1993) offered a different approach. In line with the process model, they suggested that depersonalization may result from emotional exhaustion. However, in contrast to Leibe and Maslach (1998), they argued that reduced personal accomplishment is derived from a heightened level of emotional exhaustion rather than depersonalization. The third model proposed suggested a phase approach (cf. Tait et al., 2005). The phase model begins with depersonalization in response to heightened work stress leading to negative beliefs about one's achievements. Emotional exhaustion then follows due to high depersonalization levels and low personal accomplishment beliefs.

Collectively, these models proposed different directions for the relationships between burnout components. All three models suggested that exhaustion is a response to work stress (Leibe and Maslach, 1998; Lee and Ashforth, 1993; Demerouti et al., 2001) and two of the models (Leibe and Maslach, 1998; Lee and Ashforth, 1993) argued that exhaustion causes depersonalization.

There are a limited number of longitudinal studies investigating the direction of associations among job burnout components, yet the findings are relatively consistent. In support of the process model (Leibe and Maslach, 1998), Tait et al. (2005) found that exhaustion predicted depersonalization, which in turn predicted lack of accomplishment. Another longitudinal investigation (David and Schmidt, 2010) indicated that exhaustion predicted depersonalization and that both exhaustion and depersonalization explained personal accomplishment, measured at a 12-month follow-up. A study with an 8-year follow-up provided evidence that exhaustion predicted cynicism (Doppinger-Danner et al., 2002). Houcke et al. (2011) found that among women, emotional exhaustion triggered depersonalization, which in turn predicted reduced personal accomplishment. Among men, however, depersonalization preceded exhaustion (Houcke et al., 2011). This differential gender effect may result from differences in gender-related individual characteristics and differences in working conditions among men and women. For instance, Houcke et al. (2011) suggested that women may face more challenges in the area of work-life balance, which may cause more emotional exhaustion among women. Men may use avoidance coping strategies more frequently than women. Depersonalization may reflect the use of avoidance coping (disengagement) and, therefore,

depersonalization may be more salient among men (Hobfoll et al., 2011). In sum, the majority of (albeit not all) the research suggested that education precedes depersonalization. Importantly, none of these longitudinal studies evaluated the underlying mediating mechanisms that may explain why education might lead to disengagement or cynicism. The present study attempts to fill this void.

Self-efficacy and social support are among the most frequently examined resources that play important roles in understanding the development of work stress consequences such as burnout (Cohen and Douvan, 1999; Pascoe et al., 2002; Smolkin et al., 2015). Perceived social support represents the perception that help provided by others (e.g., coworkers, supervisor) is adequate and also refers to the perceived quality of support which facilitates adjustment (Schwartz and Knell, 2007). Self-efficacy is defined as one's beliefs in one's own ability to manage environmental demands and exercise control over one's own functioning (Bandura, 1997). According to social cognitive theory (Bandura, 1997; Leontyevna and Schwartz, 2015) self-efficacy measures should be context-specific because self-efficacy beliefs are context-specific beliefs. Self-efficacy measures applied in the context of burnout account for a broad range of work-related competencies. For example, they cover workers' confidence that they can employ the skills necessary to deal with job-specific tasks, and ability to cope with job-specific challenges (Shoji et al., 2015). Yet, the systematic review by Shoji et al. (2015) did not identify a measure of self-efficacy that focused on these aspects of burnout. Previous research on burnout suggests developing and applying context-specific self-efficacy measures, because they better predict burnout and work-stress related outcomes (Salanova et al., 2002). Therefore, to gain a better insight into the relationships between burnout components research should apply a measure of self-efficacy focusing on dealing with burnout-related issues.

Theoretical models explaining burnout consistently propose that control beliefs (including self-efficacy) and social support constitute critical resources that are important to consider (e.g., job demands-control-support [JD-C] model, Kasanik and Theodor, 1999; the conservation of resources [COR] theory, Hobfoll, 1989). Low levels of these resources lead to negative individual and organizational consequences, such as exhaustion and depersonalization (Kasanik and Theodor, 1999). Cross-sectional and longitudinal research has confirmed that baseline levels of self-efficacy and social support independently explain disengagement (or engagement) and exhaustion (McCune et al., 2007; Xanthopoulos et al., 2009; Hays et al., 2013; Yu et al., 2015). The key limitations of models such as JD-C is that resources are depicted as static. Consequently, they are criticized by these models' mainline level of resources rather than change in resources. A notable exception is COR theory that takes a dynamic approach including resources change as a central mechanism (Hobfoll, 1989; Hobfoll et al., 2009).

COR theory (Hobfoll, 1989, 2011) suggests that a loss or depletion of a broad range of resources (e.g., emotional exhaustion and reduced motivation to engage in various challenging tasks) may cause further loss of personal resources

(such as self-efficacy and social support). Hobfoll refers to this as a loss spiral. For example, the state of exhaustion may be used as a starting point for depicting the loss sequence between burnout and resources. Exhaustion can be viewed as one facet of resource depletion. The subsequent loss of personal resources in turn increases the likelihood of developing specific negative consequences (Hobfoll, 1989, 2011). Thus, it may be assumed that a high level of education captures a stage in the loss spiral that is followed by further losses of personal resources such as self-efficacy or perceived social support. Importantly, resources operate in sequences as "resources" (Hobfoll, 2011), not as independent factors. People who exhaust their resources are most vulnerable to additional losses that lead to a further depletion of their resources (Hobfoll, 1989, 2011). Concluding, it may be assumed that education may be a precursor to a further loss of resources, causing a negative change in self-efficacy and a decline in perceived social support. This, in turn, would increase the likelihood of other negative consequences of work stress, such as disengagement (which may develop to prevent further loss of personal resources), absenteeism, and turnover.

We found on a longitudinal study confirming that emotional exhaustion has an effect on self-efficacy and that self-efficacy may mediate the relationship between exhaustion and other burnout components (Bosmans and Denis, 2000). A possible explanation of this effect is related to the source of self-efficacy, namely mastery experiences and emotional states (Bosmans and Denis, 2000). High levels of emotional exhaustion may lead to a reduction in mastery experiences. Moreover, excessive emotion and emotional arousal connected with exhaustion theoretically would also result in reduced self-efficacy beliefs (Bandura, 1997).

As suggested by Hobfoll (2011), resources do not operate in a parallel manner but rather they form "a caravan." Schwartz and Knell (2007) linked self-efficacy and social support by proposing the cultivation hypothesis. People with a higher level of self-efficacy are more effective in finding, maintaining, and developing supportive social relationships; therefore, social support is maintained by self-efficacy. An alternative enabling hypothesis suggests that social support facilitates self-efficacy (Schwartz and Knell, 2007). Research conducted in the context of secondary traumatization among human services workers provided support for the cultivation hypothesis, but not for the enabling hypothesis (Shoji et al., 2015).

Our studies investigated the associations between two components of burnout, exhaustion and disengagement within the context of personal resources. We investigated the importance of change in two primary personal resources, burnout self-efficacy and work-related social support. The associations were tested in two longitudinal studies conducted among human services workers working in the US and Poland with military and civilian clients. Specifically, it was hypothesized that exhaustion at Time 1 would predict disengagement at Time 2. Second, we hypothesized that the exhaustion—disengagement association would be sequentially mediated by change in self-efficacy and change in social support. These mediating

effects were tested after controlling for Time 1 disengagement. The hypothesis was tested controlling for years of work experience. This variable is one of the key determinants of burnout (Beehr and Shepard, 2009), producing similar effects across different cultures (Gill et al., 2012).

## STUDY 1

### Methods

#### Participants

Study 1 was a part of a large study investigating secondary traumatic stress and job burnout among behavioral healthcare providers for US military personnel. Inclusion criteria for this study included (a) working as a behavioral healthcare provider at least one year, (b) providing services for US military personnel, and (c) being indirectly exposed to trauma through their work. Two hundred and ninety-four participants (mean age = 46.87 years old [ $SD = 12.76$ ], 65.9% women) completed the online survey at Time 1 (T1). Among those, 135 participants (mean age = 50.62 years old [ $SD = 12.53$ ], 71.1% women) completed the online survey at Time 2 (T2). Table 1 displays demographic information for compliance ( $n = 135$ ). At Time 1, participants reported various indirect traumatic exposures (i.e., secondary exposures through their work), including life-threatening injuries of a director or someone close (91.9%), combat exposure (91.1%), sudden unexpected death of someone close (90.4%), sexual assault (87.4%), physical assault (85.9%), transportation accidents (83.7%), natural disaster (68.9%), other serious accidents (63.7%), and other life-threatening crimes (57.0%).

### Measurement

Participants completed questionnaire assessing job burnout, self-efficacy for job burnout, social support, and demographics.

#### Burnout

Oldenburg Burnout Inventory (OBI; Halburdson and Demerouti, 2005) was used to assess emotional exhaustion and disengagement. Respondents rated the agreeableness for each statement regarding work-related distress on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items included "Lately, I tend to think less at work and do my job almost mechanically" for the disengagement subscale and "After work, I tend to need more time than in the past in order to relax and feel better" for the emotional exhaustion subscale. Cronbach's alpha coefficients were 0.95 for disengagement at T1 and T2, 0.91 for exhaustion at T1, and 0.88 for exhaustion at T2.

#### Change in Burnout-Related Self-Efficacy

An 11-item Burnout Self-Efficacy Scale was applied to measure self-efficacy for dealing with job burnout (Luu, 2003). The scale was developed in line with Bandura's (1997) suggestion to construct self-efficacy measures with all items reflecting specific demands facing human service workers dealing with negative consequences of work abuse. The initial research conducted among 252 Singaporean employees showed good reliability of the scale, with Cronbach's alpha of 0.93, and good discriminant validity, as shown by moderate correlations with other measures and burnout indicators (Luu, 2003). Each question begins with the stem "How capable am I to..." followed with items such as "deal with a feeling that this job wears me out" and "handle the feeling that my job is useless." The response ranged from

TABLE 1 | Descriptive statistics for demographics for Study 1 (US Data) and Study 2 (Polish Data).

Measure	Study 1: Time 1	Study 1: Time 2	Study 2: Time 1	Study 2: Time 2
<b>MEASURES</b>				
Mean age in years (SD)	46.87 (12.76)	50.62 (12.53)	46.62 (11.9)	46.37 (11.0)
<b>SEX</b>				
Female	65.9% (93)	71.1% (93)	75.1% (93)	73.0% (93)
Male	34.1% (49)	28.9% (39)	24.9% (33)	27.0% (37)
<b>INTIMATE RELATIONSHIP</b>				
In a long-term relationship	75.2% (103)	72.6% (93)	74.9% (93)	77.7% (103)
Not in long-term relationship	24.8% (34)	27.4% (37)	25.1% (33)	22.3% (30)
<b>HIGHEST DEGREE</b>				
High school	0.0% (0)	0.0%	20.0% (27)	30.9% (40)
Junior high degree	0.0% (0)	0.0%	–	–
Bachelor's degree	2.0% (3)	1.0% (1)	21.0% (28)	20.2% (27)
Master's degree	16.3% (22)	14.1% (19)	45.0% (60)	60.1% (79)
Doctoral degree	81.7% (110)	84.9% (113)	34.0% (46)	10.8% (14)
<b>PROFESSION</b>				
114 CP (84.5%)	60 CP (47.0%)	114 CP (84.1%)	60 CP (65.1%)	
71 counselor (52.6%)	69 counselor (52.3%)	116 other (87.0%)	79 other (85.1%)	
67 other (50.3%)	29 other (22.2%)	66 other (49.3%)	29 other (31.2%)	
29 HCP (21.6%)	2 HCP (1.5%)			

Sample size (n) for Time 1 and US for Time 2, sample size (n) for Time 1 in a US and 135 for Time 2 demographics distribution (SD) to 1000 because of missing data. Long-term relationship: individual-coupled couple and couple in committed relationship. CP: clinical psychologist; HCP: health care provider; other: social worker.

1 (very unpleasant) to 7 (very pleasant). In the present study Cronbach's alpha coefficient was 0.91 at T1 and T2. Standardized residual values were used as the index of change. To obtain the standardized residual value T2 self-efficacy was entered in the regression analysis as a dependent variable and T1 self-efficacy was entered as a predictor. A higher value of the index means a higher increase of self-efficacy whereas a lower value means a greater decrease of self-efficacy. A similar approach was used previously (Banight et al., 2008).

#### Change in Perceived Social Support

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) was used to assess perceived social support. Respondents rated the agreement with each statement regarding their perception of social support from family, friends, and significant others on a 7-point scale ranging from 1 (very strongly disagree) to 7 (very strongly agree). The original instruction was modified to reflect support from family, friends, and significant others (including co-workers and supervisors), enabling participants to cope with difficulties at work. Sample items included "I can talk about my problems with my family," "My friends really try to help me," and "There is special person who I can count on when I am in need." Cronbach's alpha coefficient was 0.94 at T1 and T2. Similar to self-efficacy for job burnout, residual change scores were calculated as the index of change.

#### Demographics

We collected demographic information regarding the number of years of work experience, participants' age, gender, level of education, relationship status, occupation, and occupational unit with indirect exposure to traumatic events through their work.

#### Procedures

The Institutional Review Board at the author's institution in the U.S. approved this study. The details of the procedure were described elsewhere (Chalab et al., 2013a; Shoj et al., 2014). Potential participants received the invitation email containing the online survey link. They indicated whether they agreed to participate in the study on the online informed consent form. Those who agreed to take part in T2 assessment received the invitation email with the online survey link 6 months after the T1 survey. The mean time elapsed between T1 and T2 was 196.77 days ( $SD = 200.0$ ).

#### Analytical Procedures

We used the maximum likelihood estimation method to impute missing data for 135 completers using IBM SPSS Amos (version 22). Measurement items for burnout, change in social support and self-efficacy were included in the full information maximum likelihood imputation. The assumption of this approach to data imputation is that the missing data must be missing at random (MAR). To assess MAR, Little's missing completely at random (MCAR) test, which is more sensitive than MAR, was conducted in IBM SPSS (version 22) using gender, profession, and intimate relationship status as reference. Results of the Little's MCAR test showed missing data uses MCAR for items for MSPSS at T1,  $\chi^2(8) = 8.09, p = 0.78$ , items for self-efficacy for job burnout at T1,  $\chi^2(0) = 8.75, p = 0.65$ , item for CLEBI at

T1,  $\chi^2(0) = 32.67, p = 0.34$ , items for MSPSS at T2,  $\chi^2(8) = 8.37, p = 0.71$ , items for self-efficacy for job burnout at T2,  $\chi^2(0) = 2.29, p = 0.99$ , and items for CLEBI at T2,  $\chi^2(8) = 27.37, p = 0.30$ . In total, 0.08% of missing data were replaced (0.04% at Time 1 and 0.11% at Time 2). MacCall's coefficient indicated a slight deviation from multivariate non-normality (critical ratio of 3.45). We examined bootstrapped confidence intervals for coefficients for consistency of results.

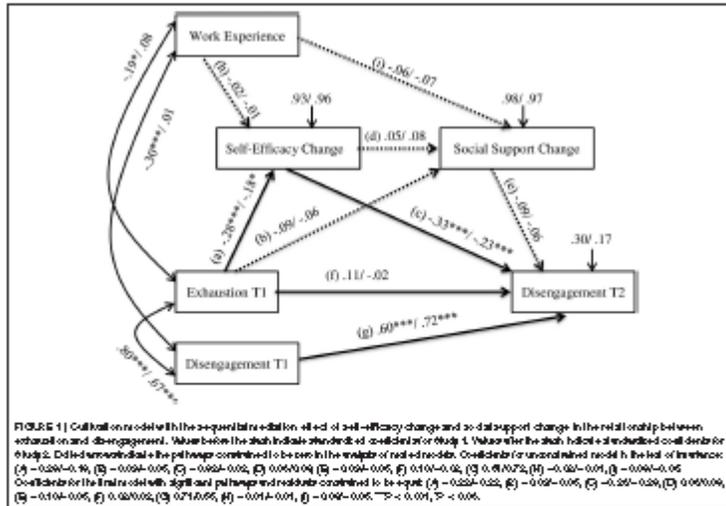
We tested the cultivation hypothesis in the sequential mediation analysis using Mplus (see Figure 1). We used education at T1 as the independent variable and disengagement at T2 as the dependent variable. Disengagement at T1 and years of work experience were used as covariates. In this model, the relationship between education at T1 and disengagement at T2 was sequentially mediated by the change in self-efficacy and the change in social support. Each indirect effect was tested using 95% bootstrap confidence intervals with 10,000 bootstrap samples. We used three fit indices to assess model-data fit. We used a cutoff point  $<0.10$  for the root mean square error of approximation (RMSEA; Bollen and Stokke, 1993), a cutoff point  $>0.90$  for the comparative fit index (CFI; Hu and Bentler, 1999), and a cutoff point  $<0.08$  for the standardized root mean residual (SRMR; Hu and Bentler, 1999).

#### Results

Table 1 depicts the descriptive statistics for the demographic variables. Table 2 displays correlation coefficients, means, and standard deviations for the study variables. Attention analyses showed that dropouts had significantly higher disengagement at T1 than did completers,  $t(22) = 2.51, p = 0.01$ , and completers were significantly older than dropouts,  $t(20) = 2.17, p = 0.03$ . There was no significant difference between dropouts and completers in emotional exhaustion at T1,  $t(22) = 1.87, p = 0.06$ , self-efficacy at T1,  $t(22) = 1.15, p = 0.25$ , social support at T1,  $t(22) = 0.30, p = 0.70$ , gender,  $\chi^2(1) = 2.56, p = 0.11$ , profession,  $\chi^2(4) = 4.12, p = 0.39$ , intimate relationship status,  $\chi^2(1) = 2.07, p = 0.15$ , or education,  $\chi^2(0) = 5.01, p = 0.29$ . We men and men did not differ significantly across the study variables ( $p$ -value range: 0.14–0.88).

Repeated measures analysis of variance indicated that burnout self-efficacy did not change significantly from T1 to T2,  $F(1, 134) = 0.44, p = 0.509, \eta^2 = 0.003$ . Similarly, the levels of perceived social support remained similar across the measurement points,  $F(1, 134) = 1.63, p = 0.205, \eta^2 = 0.012$ . In line with these findings a correlation analysis indicated relatively high stability across study variables, with T1 and T2 correlation coefficients ranging from 0.56 (self-efficacy) to 0.82 (social support). High correlations between T1 and T2 indicators of self-efficacy and social support may result in low variances of raw change scores and, therefore, limit the usefulness of such scores. Instead of raw change scores we applied standardized change scores. Standardized scores are usually associated with T1 scores and maintain high reliability even when the correlations between T1 and T2 are high (Alison, 1999).

The examination of the hypothesized model assuming a sequential mediation effect of self-efficacy change and social support change in the relationship between education at T1 and



disengagement at T2 also used that the model had adequate model-data fit, RMSEA = 0.052 (90% CI [0.050, 0.152]), CFI = 0.997, Tucker-Lewis Index (TLI; Tucker and Lewis, 1973) = 0.990, SRMR = 0.018. Figure 1 also states detailed coefficients for each parameter in the model. Bootstrap confidence intervals and  $p$  values were consistent. Based on bootstrap confidence intervals, the pathway through the residue of self-efficacy is significant (95% bootstrap CI [0.035, 0.187]). However, neither the pathway through the social support change (95% bootstrap CI [-0.016, 0.032]) nor the pathway through the self-efficacy change and subsequently social support change (95% bootstrap CI [-0.004, 0.005]) was significant. These results indicated that high levels of exhaustion at T1 predicted a greater decrease in self-efficacy, which in turn led to higher levels of disengagement at T2.

Additionally, we tested a nested model with non-significant pathways from self-efficacy change to social support change, from T1 exhaustion to social support change, and from social support change to T2 disengagement constrained to zero. Results showed that the nested model was not significantly different from the hypothesized model,  $\chi^2(3) = 4.79$ ,  $p = 0.19$ . Thus, this nested model may be accepted.

## Discussion

The results of Study 1 did not support the cultivation hypothesis among behavioral healthcare providers working for U.S. military

personnel. However, we found an indirect effect of a decline in self-efficacy in the relationship between exhaustion at T1 and disengagement at T2. In Study 2, to replicate these findings, the same model was tested among Polish professional working with people suffering from an exposure to traumatic events.

## STUDY 2

### Methods

#### Participants

Study 2 was a part of larger study examining understated services and demands among human services professionals who were indirectly exposed to traumatic events through their work. Inclusion criteria for this study was (a) working at least 1 year as a healthcare or social services provider, (b) providing services for civilians who were exposed to traumatic events, and (c) indirectly experiencing traumatic events through their work. Two hundred and six participants (mean age = 35.32 [SD = 8.46], 76.1% women) completed the online survey at T1. Of those, 193 participants (mean age = 34.97 [SD = 8.06], 79.3% women) completed the online survey at T2. Table 1 displays demographics for 193 completers for Study 2. At T1, they were exposed to a number of indirect traumatic events, including illness or injury to clients or loved one (89.6%),

TABLE 2 | Means, standard deviations, correlations, and correlations between variables two studies (Time 1).

Measures	Mean (SD)								
	1	2	3	4	5	6	7	8	9
1. Disengagement T1	0.77	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
2. Disengagement T2	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
3. Education T1	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
4. Education T2	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
5. Self-efficacy T1	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
6. Self-efficacy T2	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
7. Social support T1	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
8. Social support T2	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
9. Work satisfaction T1	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67

Correlations within or across variables were significant at  $p < 0.05$ . Correlations between variables were significant at  $p < 0.05$ .  $r = 0.01$ ,  $r = 0.01$ .

physical violence (88.1%), sudden unexpected death of loved one (84.5%), transportation accidents (72.0%), other serious accidents (64.2%), natural disaster (31.1%), sexual violence (51.3%), other serious life-threatening crime (30.9%), combat (7.3%), other traumatic events (52.9%).

Measurement

We used the Polish version of the same measurements as in Study 1 to assess burnout, self-efficacy changes, social support changes, and demogaphics. Each translation was used to establish accurate translation from English to Polish. Cronbach's alpha coefficients were 0.90 for disengagement at T1, 0.81 for disengagement at T2, 0.93 for education at T1, 0.78 for education at T2, 0.91 for self-efficacy at T1 and T2, and 0.96 for MSFSS at T1 and T2. In Study 1, a dual latent variable model of self-efficacy at T1 and T2 and a dual latent variable model of social support at T1 and T2 were used as the change indices.

Procedures

The Internal Review Board at the author institution in Poland approved this study. The details of the procedures were described elsewhere (Czuchra et al., 2013a); Shoji et al., 2019). The message for invitation to the study was posted on social networking website for professionals who were potentially exposed to indirect traumatic events. After completion of the T1 assessment, those who agreed to take part in the T2 assessment received the invitation email. The mean time elapsed between T1 and T2 was 162.12 days (SD = 39.39).

Analytical procedures

The same analytical procedures and software were used as in Study 1 on 193 completion of the study. The Little's MCAR test showed that missing data were MCAR for burnout at T1,  $\chi^2(9) = 119.44$ ,  $p < 0.05$ , burnout for MSFSS at T1,  $\chi^2(9) = 89.69$ ,  $p < 0.05$ , burnout for self-efficacy for job burnout at T1,  $\chi^2(9) = 61.99$ ,  $p < 0.05$ , burnout for OLE at T1,  $\chi^2(9) = 161.14$ ,  $p < 0.05$ , and burnout for MSFSS at T2,  $\chi^2(9) = 55.73$ ,  $p < 0.05$ . However, burnout for self-efficacy for job burnout at T2 was not MCAR,  $\chi^2(9) = 112.18$ ,  $p < 0.01$ . Burnout for self-efficacy at T2 contained only 0.22% of missing data, therefore, these items were imputed with other missing data. In total 0.56% of data (0.52% at Time 1, 0.62% at Time 2) was imputed as missing data. The same analytic approach was utilized as in Study 1 to test our primary hypothesis. MacCall's coefficient indicated a slight deviation from multivariate normality (critical ratio of 4.99). We examined the consistency between significance coefficients and 95% bootstrap confidence intervals.

Results

Table 2 displays means, standard deviations, and Pearson correlations for 193 participants for Study 2. Attrition analysis showed that there was no significant difference between completers and dropouts in disengagement at T1,  $t(90) = 1.07$ ,  $p = 0.29$ , education at T1,  $t(90) = 0.16$ ,  $p = 0.87$ , self-efficacy at T1,  $t(90) = 0.44$ ,  $p = 0.66$ , social support at T1,  $t(90) = 0.92$ ,  $p = 0.36$ , age,  $t(90) = 0.92$ ,  $p = 0.36$ , gender,  $\chi^2(1) = 3.78$ ,  $p = 0.05$ , profession,  $\chi^2(2) = 1.77$ ,  $p = 0.41$ , and

education,  $\chi^2(5) = 4.51, p = 0.21$ . Those who were in a long-term relationship tended to dropout more frequently,  $\chi^2(1) = 3.91, p = 0.05$ . Emotional exhaustion at T1 was significantly higher among women ( $M = 2.86$ ) than among men ( $M = 2.59$ ),  $t(309) = 2.17, p = 0.03$ . Women reported significantly higher social support at T2 ( $M = 5.29$ ), compared to men ( $M = 4.66$ ),  $t(309) = 2.34, p = 0.02$ .

Repeated measures analysis of variance showed that burnout self-efficacy did not change from T1 to T2,  $F(1, 309) = 0.10, p = 0.752, \eta^2 = 0.001$ . The levels of perceived social support remained similar across the measurement points,  $F(1, 309) = 2.36, p = 0.127, \eta^2 = 0.127$ . Correlation analysis confirmed moderate-to-high stability across study variables, with T1 and T2 correlation coefficients ranging from 0.23 (social support) and 0.31 (self-efficacy), to 0.74 (disengagement). As in Study 1, we applied radicalized change scores as the indicators of change in self-efficacy and social support.

Results of the sequential mediation analysis of self-efficacy change and social support change in the relationship between education at T1 and disengagement at T2 showed that the model had adequate fit, RMSEA = 0.080 (90% CI [0.080, 0.162]), CFI = 0.980, NFI = 0.919, SRMR = 0.024. Significance levels of all coefficients were consistent with results of 95% bootstrap confidence intervals. Figures 1 display standardized coefficients for parameters in the model. Bootstrap confidence intervals indicated that the pathway through self-efficacy change was significant (95% bootstrap CI [0.004, 0.079]). The pathway through social support change (95% bootstrap CI [-0.003, 0.024]) as well as the pathway through self-efficacy change and social support change (95% bootstrap CI [0.000, 0.007]) was not significant.

As in Study 1, a nested model with constraints and the hypothesized model with no constraints were compared. In the nested model, three pathways were constrained to zero: from self-efficacy change to social support change, from social support change to T2 disengagement, and from T1 education to social support change. Results indicated that the nested model was not significantly different from the hypothesized model,  $\chi^2(3) = 3.96, p = 0.27$ , therefore it may be accepted.

#### Test of Invariance of Associations Across Study 1 and Study 2

The invariance of the findings across the two studies was tested using a two-group model (see Table 3). The two-group hypothesized unconstrained model (Two-Group Model 1) was compared with the nested models. The Two-Group Model 2 had the pathways constrained to be equal across groups. These were the pathways that were significant in the one-group model analyses (from T1 education to self-efficacy change, from self-efficacy change to T2 disengagement, and from T1 education to T2 disengagement). These pathways were constrained to be equal (Model 2). In the unconstrained model (Two-Group Model 3), all structural coefficients were constrained to be equal. Finally, the residuals of disengagement at T2 and residuals of self-efficacy change in those were constrained to be equal in the last nested model (Two-Group Model 4). Results showed that the Two-Group Model 2 and Two-Group Model 4 were not

significantly different from the hypothesized model (Two-Group Model 1, see Table 3). Based on these findings, the nested model with significant pathways and residuals constrained to be equal across the two groups (Two-Group Model 5) was compared to the hypothesized model. Results indicated that (Two-Group Model 5) was not significantly different from the hypothesized unconstrained model (Two-Group Model 1). Thus, the nested model with significant pathways and residuals constrained to be equal across the two groups (i.e., participants of Study 1 and Study 2) may be accepted.

#### Test of Invariance of Associations Across Subsamples of Men and Women

Additional analyses aimed at testing invariance of the nested model across subsamples of men and women were conducted. The hypothesized two-group model without constraints was compared with the two-group nested models with constraints, assuming equal effects for both genders. The nested model developed for the test of invariance between Study 1 and Study 2 (i.e., Two-Group Model 1) tested the invariance among men and women.

The two-group model with path coefficients constrained to be equal in men and women was not significantly different from the two-group model without constraints,  $\Delta\chi^2 = 6.17, p = 0.10$ . In addition, the two-group nested model with residuals constrained to be equal was not significantly different from the two-group model without constraints,  $\Delta\chi^2 = 3.84, p = 0.15$ . However, the two-group nested model with covariance constrained to be equal was significantly different from the two-group model without constraints,  $\Delta\chi^2 = 20.58, p < 0.01$ . Therefore, the two-group nested model with path coefficients and residuals constrained to be equal was compared to the two-group model without constraints. Results showed that these models were not significantly different,  $\Delta\chi^2 = 9.40, p = 0.09$ , thus, the two-group nested model, assuming equal paths and residuals among men and women may be accepted as the final model. The results indicated that pathways in the nested model were similar in the subsamples of men and women.

#### Differences in Mean Levels of the Study Variables: Comparing Study 1 and Study 2

The comparisons conducted for data obtained in Studies 1 and 2 indicated that there were significant differences in the mean levels of the study variables (see Table 2). The Polish sample had significantly higher scores for burnout indicators at T1 and T2 than did the US sample. The US sample, in comparison, had significantly higher scores for self-efficacy at T1 and T2, social support at T1 and T2, and indicated more work satisfaction than did the Polish sample.

#### DISCUSSION

The results obtained in Study 2 were consistent with the Study 1 findings. Specifically, high levels of exhaustion at T1 led to a large decline in self-efficacy, which in turn resulted in a high level of disengagement at T2. Furthermore, the two-group model analysis indicated that the associations between the key investigated variables were similar across Study 1 and Study 2.

TABLE 2 | Tests of Invariance for the Hypothesis-Driven Models in Study 1 and Study 2.

Model	Model description	$\chi^2$	$\chi^2/df$	df	$\Delta\chi^2$	$\Delta df$
Two-Model Group Model 1	Hypothesis-driven model	93.09	1.07	87	—	—
Two-Model Group Model 2	8 identical paths constrained to be equal	95.76	1.05	89	2.67	0.01
Two-Model Group Model 3	Common variance constrained to be equal	99.91	2.40	87	26.82	0.07
Two-Model Group Model 4	Residuals constrained to be equal	93.98	1.07	89	0.89	0.00
Two-Model Group Model 5	8 identical paths and residuals constrained to be equal	95.99	1.09	89	2.90	0.01

The model  $\chi^2$  for the unconstrained model is acceptably fit ( $\chi^2(87) = 93.09$ ,  $CFI = 0.99$ ,  $RMSEA = 0.01$ ,  $SRMR = 0.01$ ). The  $\Delta\chi^2$  indicates a change in  $\chi^2$  from the unconstrained model to the model.  $\chi^2$  and  $\Delta\chi^2$  tests indicate that the model is significantly different from the model hypothesis-driven model.  $\Delta df$  is the difference in degrees of freedom.  $***p < 0.001$ .

## GENERAL DISCUSSION

The findings obtained in two samples collected in different cultures provide novel evidence for the direction of the relationship between education and disengagement in the context of change in personal resources. Both samples demonstrate that education predicted disengagement approximately 6 months later. Additionally, the effects of education on disengagement were mediated by an index of change in self-efficacy beliefs, whereas higher education led to a large decline in self-efficacy scores 6 months, which in turn resulted in higher disengagement levels.

The present study confirms the assumptions formulated in the process model advocated by Leube and Mauch (1998) and Lee and Ashforth (1999). Further confirming earlier findings (Toppin-Turner et al., 2002; Tait et al., 2005; Diestel and Schmidt, 2010) our two-study investigation points out that these associations are invariant (i.e., similar in strength) across two distinct samples of human service workers, differing in terms of country of employment, type of clients (civilian vs. military), or type of occupation. Furthermore, the associations are similar although the levels of burnout components or work experiences vary across the samples.

Our investigation attempted to test for the underlying mediating mechanisms which may explain why education predicts disengagement. Therefore, it goes beyond previous theoretical and empirical approaches that assumed and tested the direct effects of education on disengagement (Leube and Mauch, 1998; Lee and Ashforth, 1999; Toppin-Turner et al., 2002; Tait et al., 2005; Diestel and Schmidt, 2010). The findings are also in line with meta-analyses indicating that self-efficacy is relatively strongly related to burnout components across occupation groups, countries, and professional age and gender (Shoji et al., 2015). In line with the COR theory and the theoretical loss spiral (Hobfoll, 1989, 2011), it appears that an individual's state of education may trigger a decline in personal resources (a negative change in self-efficacy beliefs), which in turn leads to greater disengagement. Thus, further results obtained by Rousseau and Tomic (2000) that suggested the mediating role of the state of self-efficacy, and in line with COR as indicated that the mediation between education and disengagement related to a change in self-efficacy. This process offers a much clearer appreciation for the coping dynamics involved with burnout.

One could argue that the increase in disengagement is a specific coping response to a series of increasing personal vulnerability comprised of physical fatigue and increasing self-doubt concerning one's capability to manage work-related demands.

The effects of education on disengagement may be further explained by change in other mediating mechanisms (e.g., personal growth) triggered by stressful events. So far, the mediating role of evaluation of personal change (or self-evaluations other than self-efficacy) have been addressed in the context of indirect exposure to traumatic material at work (i.e., via traumalabel client; cf. Shoji et al., 2015). Future research investigating education–disengagement association among various types of human service workers could utilize this approach and look for the mediating mechanism of optimal/constructive change in self-evaluations and beliefs such as identifying opportunity in life or meaning in life (Arnold et al., 2005; Park, 2010).

In contrast to the “resources caravan” hypothesis (Hobfoll, 2011), we did not find that a change in self-efficacy and a change in perceived social support operated in sequence. Furthermore, we did not confirm the cultivation hypothesis, suggesting that self-efficacy prompts social support, which in turn affects workers' well-being (Schwabach and Isell, 2007). The effect of education on disengagement was explained only by self-efficacy changes. Our findings are partially in line with earlier research by Schaubli et al. (2009). They found no evidence for the existence of a loss cycle that included social support loss (Schaubli et al., 2009).

A lack of effect of social support on disengagement may result from the fact that this variable operates indirectly, via other resources. For example, social support may directly affect perceived personal growth (Shoji et al., 2015) and perceived personal growth may in turn be directly related to well-being outcomes. Thus, social support might have a potential to contribute to a spiral gain of other resources, reducing disengagement. Future studies need to investigate if social support may operate in concert with other stress-related cognitions, contributing either to spiral loss or spiral gain of resources.

Burnout and personal resources are relatively stable. Longitudinal research conducted over periods ranging from 2 months to 7 years indicated that approximately one-third of variance of burnout and about a half of variance of resources

may be stable over years (for overview see Sappalá et al., 2015). Studies 1 and 2 applied relatively short follow-ups, but stability of analyzed constructs was similar to stability found in earlier research (Sappalá et al., 2015). The relatively high stability of resources and burnout may reduce the likelihood of finding the effects of change of resources (such as social support) on burnout components.

**The present study has limitations.** Our approach to burnout focuses on its two dimensions, which are included into a somewhat total burnout model (cf. Haladarek et al., 2005). Therefore, any conclusions regarding to the internal structure of burnout should be treated with caution and not generalised beyond exhaustion and disengagement. We controlled for the number of years of work experience and observed the effects of work experience similar to those found in earlier research (for meta-analysis see Basso and Shapiro, 2004). However, we did not control for other potential confounders, such as job demands, job control, or other indicators of job stress.

Although, both of our studies was longitudinal, there was only two measurement points. A four-wave investigation would be optimal to test a sequential multiple mediation model with two mediators and we plan to conduct this type of investigation next. Regarding a methodological limitation related to a longitudinal design, the research procedure did not allow us to explain reasons for dropout at T2. Relatively high attrition rate limit the generalizability of the findings. Although for a majority of variables we found no systematic dropout patterns, we observed trends indicating a systematic decrease of dropout for two variables in Study 1 and one variable in Study 2. In Study 1, participants with high disengagement (TI) was lost at the follow-up. Therefore, the findings of Study 1 may have reflected the effects observed for those who are burnout was lower at T1. Importantly, the findings of Study 1 and Study 2 revealed similar patterns of associations, and there was no systematic dropout for burnout indicators in Study 2.

Another limitation refers to the choice of self-efficacy measures. Although our findings suggested that the scale had good reliability and shared more than 38% of variance with other constructs, confirming the discriminant validity, future research testing the validity of the burnout self-efficacy scale is needed.

The study is also limited in that we tested only one direction from exhaustion to disengagement, which is in line with previous findings (e.g., Toppinen-Bennet et al., 2002; Teir et al., 2005; Dostal and Schmidt, 2010). Testing competing models could provide additional conclusions, however, the test for the direction of the relations between exhaustion and disengagement could be obtained in multi-wave natural experiments where observing workers from the first days of their employment throughout their professional career. Furthermore, we did not test competing hypotheses, such as job resources (e.g., self-efficacy and social support) predicting job burnout components or that job burnout components could explain job resources. Longitudinal studies carried over several years indicate

that these relationships may be bidirectional (Sappalá et al., 2015). Future research should further investigate the direction of the relationships among burnout components, self-efficacy, and social support.

Finally, in line with earlier findings (e.g., Shoji et al., 2014), we only tested the cultivation hypothesis. Future research should consider alternative models to understand how self-efficacy and other personal resources (e.g., perceived social support) and environmental conditions (e.g., work related constraints) may interact when explaining burnout components. Accounting for other resources relating to social environments or self-beliefs would enrich our understanding of the mechanisms explaining how exhaustion influences disengagement.

In sum, this is the first longitudinal two-study cross-cultural investigation on how changes in personal resources mediate between exhaustion and disengagement, measured 6 months apart. Both studies consistently indicate that reductions in job burnout self-efficacy were determined by exhaustion and facilitated greater disengagement. Future research that includes the interaction of personal resources and environmental factors in untargeting the negative components of burnout will help move this literature forward informing critical interventions. In particular, the findings may have some implications for prevention of the escalation of burnout. Interventions aiming at a reduction of negative consequences of work stress may target workers with higher levels of exhaustion and work to enhance their self-efficacy beliefs specifically related to the negative consequences of work stress.

## AUTHOR CONTRIBUTIONS

CB, RC served as the PI's on the project providing significant conceptual and design contribution and significantly contributing to drafting the manuscript. CB, RC, AK, CY were involved in data acquisition. ES, RC, AL, were involved in the statistical analyses for the projects. CB, RC, ES, AK, CY, AL, AK were involved in manuscript preparation and final approval of the paper. CB, RC, ES, AK, CY, AL, AK agree to be accountable for all aspects of the work especially to responding to questions related to the accuracy or integrity of any part of the work.

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**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# Appendix 33

## SupportNet: Meta-Analysis of Interventions to Decrease Burnout in Medical and Behavioral Health

Shaun Stearns, Kotaro Shoji, & Charles C. Benight

### Abstract

The current study investigated a randomized controlled trial (RCT) for the SupportNet intervention, developed to aim to reduce job burnout in U.S. military behavioral healthcare providers. In addition, we conducted meta-analysis (MA) investigating interventions addressing burnout in both behavioral health providers (BHP) and medical healthcare providers (MHP). Results for the SupportNet showed the treatment group had significantly lower job burnout at the post-test than the pre-test. Findings of the MA showed effect sizes ranged small to medium. Effect sizes for the SupportNet and those for the MA were compared.

### SupportNet Intervention

- A web-intervention based on social cognitive theory aiming to reduce job burnout among U.S. military behavioral healthcare providers (Bandura, 1997).



- Six weekly coaching sessions (conducted over the phone) assisted participants in setting goals, identifying obstacles, and making progress, while emphasizing empowerment, providing support, and building efficacy.



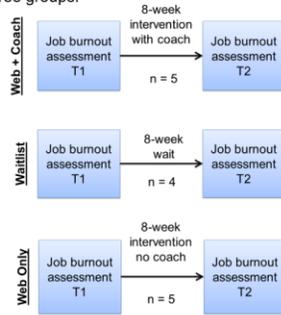
### References

Bandura, A. (1997). *Self-efficacy: The exercise of control*. Macmillan.

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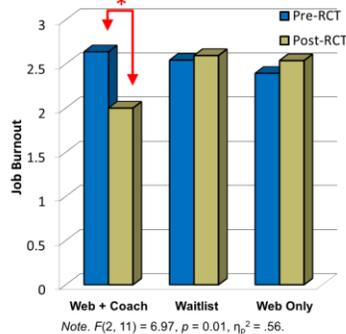
### Method for RCT

14 behavioral health providers working with US military were randomly assigned to one of three groups.



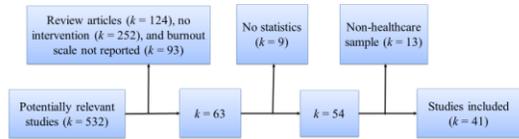
### Results for RCT

Figure 1. Interaction Effect between Group and Time on Job Burnout for Intent-to-Treat Analysis for SupportNet RCT.



### Method for Meta-Analysis

A comprehensive online literature search was conducted, using Hedges' g for an effect size.



### Moderator Analyses

#### Emotional Exhaustion

- Mindfulness > Other interventions

#### Personal Accomplishment

- Mindfulness > other interventions.

### Results for Meta-Analysis

Table 1. Results of Meta-Analysis for Job Burnout

Burnout	g	r 95% CI	N	k	Q	Fail-Safe N
Overall	0.361	[.265, .457]	1845	43	18.46	643
EE	0.286	[.184, .389]	1951	41	21.15	388
DP	0.254	[.089, .418]	1801	38	7.02	72
PA	0.269	[.135, .354]	1722	39	26.65	631

Note. EE = emotional exhaustion; DP = depersonalization; PA = personal accomplishment. Significant Q value = Heterogeneous data. A Fail-Safe N: Number of null results necessary to overturn meta-analysis results.

Table 2. Comparison between SupportNet and Meta-Analysis Effect Sizes

Burnout	Effect sizes from SupportNet RCT		Effect sizes from Meta Analysis		
	Web + Coach	Web Only	Web + Coach	Mindfulness	CBT
Overall	.778	.490	.469	.327	.281
EE	.746	.548	.415	.311	.178
DP	.431	-.116	.384	.303	.168

Note. SupportNet RCT used the Oldenburg Burnout Inventory, which does not include a personal accomplishment subscale.

### Discussion

- SupportNet RCT was effective in reducing job burnout (medium effect size).
- SupportNet RCT effect sizes were comparable to effect sizes in the meta-analysis.

#### Limitations

- Small number of RCT studies to alleviate burnout in mental healthcare providers.
- No studies in the meta-analysis that used intent-to-treat analysis.

#### Future studies

- Apply the SupportNet intervention model for other populations.
- Develop interventions for alleviating burnout that include elements from Mindfulness and CBT.

# Appendix 34



## Abstract

The number of mental health interventions offered over the Internet has rapidly increased due to improved technology and access. Research has shown positive psychological, behavioral, and clinical outcomes for those that use the web intervention; however, limited participation and high attrition rates are common for mental health web interventions. This meta-analysis examined the relationship between post-intervention mental health outcomes and intervention engagement in trauma and other mental health studies. Results showed that the cumulative effect size was small to medium and that there was no significant difference between trauma-related versus other mental health outcome studies.

## Background

- Trauma-focused web interventions have been successful in reducing trauma-related symptoms (Amstadter et al., 2009).
- Despite this success, trauma-focused web interventions also see limited participation and high attrition rates (Christensen et al., 2009).
- Greater engagement with the content in a website is associated with increased benefits (Christensen et al., 2009).
- This meta-analysis examined a comparison between studies in the trauma context and those in other contexts regarding the relationship between engagement and mental health outcomes.

## Inclusion Criteria

- Technology based mental health intervention.
- Randomized controlled trial (RCT).
- Engagement related data reported.
- Mental or behavioral health intervention with outcomes reported.
- Direct relationship between engagement and outcomes reported.
- Peer reviewed journal.
- Published after 1995.



## Method

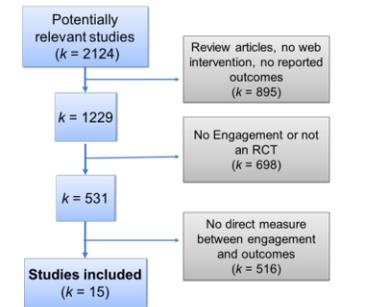
Potentially relevant studies were identified using structured query language (SQL) to automatically search EBSCO Host, PsychNet, PILOTS, PubMed, Science Direct, and Journal of Medical Internet Research (JMIR).

**Automated Query:** Custom SQL combined keywords for internet technology with behavioral and mental health interventions.

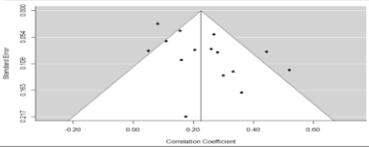
**Example SQL:**  
("mobile health" OR eHealth OR "internet intervention" (etc.)) AND (PTSD OR "intellectual disability" OR "speech disorder" OR Autism (etc.))

## Literature Search Flow

All journal articles were reviewed three times by team members to ensure reliability of file inclusion process.



## Results



**Table 1: Studies Included in the Meta-Analysis**

Author(s) and Year	Effect Size [95% CI]
<b>Trauma Studies</b>	
Ivarsson, 2014	0.36 [ 0.03, 0.69 ]
Spence, 2011	0.18 [-0.25, 0.60 ]
Spence, 2014	0.30 [ 0.04, 0.56 ]
RE Model for Subgroup	0.30 [ 0.11, 0.48 ]
<b>Non-trauma Studies</b>	
Antonini, 2014	0.52 [ 0.28, 0.76 ]
Bewick, 2008	0.11 [-0.01, 0.23 ]
Bolter, 2013.1	0.26 [ 0.11, 0.41 ]
Bolter, 2013	0.20 [ 0.05, 0.36 ]
Bromberg, 2011	0.44 [ 0.28, 0.61 ]
Calear, 2013	0.16 [ 0.08, 0.24 ]
Dorhin, 2013	0.16 [-0.04, 0.36 ]
Fischer, 2012	0.28 [ 0.11, 0.45 ]
Hester, 2013	0.05 [-0.11, 0.21 ]
Hilver-Bruce, 2012	0.08 [ 0.03, 0.13 ]
Irvine, 2013	0.27 [ 0.17, 0.36 ]
Manicavasagar, 2014	0.33 [ 0.09, 0.58 ]
RE Model for Subgroup	0.22 [ 0.15, 0.29 ]
RE Model for All Studies	0.23 [ 0.16, 0.29 ]

**Table 2. Results of Meta-Analysis for Trauma and Non-Trauma**

Outcome	r	r 95% CI	N	k	Q	Fail-Safe N
Overall	0.225*	[-.158, .293]	3460	15	43.733*	665*
Trauma	0.295*	[.112, .479]	97	3	0.458	8*
Other	0.220*	[.146, .294]	3363	12	41.437*	513*

Note. Trauma = Interventions for PTSD. Other = Other mental and behavioral health outcomes; Q = Cochran's Q measure of heterogeneity. Fail-Safe N: Number of null results necessary to overturn meta-analysis results. \*p < .001.

## Discussion

- Engagement with interventions was related to behavioral outcomes with small to medium effect sizes.
- Need for standardization of measures of engagement which conceptualizes the complex human-computer interaction processes occurring during web intervention usage.
- Effect sizes for trauma studies were not significantly different than other studies, indicating trauma web intervention engagement patterns are similar to other interventions.
- Web interventions have the potential of reaching more individuals, especially those with barriers to traditional mental health access.

## Limitations

- Small number of studies that reported relationship between engagement and outcomes.
- Very few (3) studies reported engagement with a trauma related web intervention.

RESEARCH ARTICLE

# What Comes First, Job Burnout or Secondary Traumatic Stress? Findings from Two Longitudinal Studies from the U.S. and Poland

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## Abstract

This longitudinal research examined the directions of the relationships between job burnout and secondary traumatic stress (STS) among human services workers. In particular, using cross-lagged panel design, we investigated whether job burnout predicts STS at 6-month follow up or whether the level of STS symptoms explains job burnout at 6-month follow-up. Participants in Study 1 were behavioral or mental healthcare providers (N = 135) working with U.S. military personnel suffering from trauma. Participants in Study 2 were healthcare providers, social workers, and other human services professions (N = 194) providing various types of services for civilian trauma survivors in Poland. The cross-lagged analyses showed consistent results for both longitudinal studies; job burnout measured at Time 1 led to STS at Time 2, but STS assessed at Time 1 did not lead to job burnout at Time 2. These results contribute to a discussion on the origins of STS and job burnout among human services personnel working in highly demanding context of work-related secondary exposure to traumatic events and confirm that job burnout contributes to the development of STS.

## Introduction

Job burnout and secondary traumatic stress (STS) have been recognized as the crucial consequences of extreme job demands in human services professionals [1,2]. Such demands may include frequent and intense contact with traumatized clients and chronic exposure to traumatic content at work [1,2]. Job burnout generally refers to a response to a broad range of occupational stressors and chronic tediousness in the workplace, and it is often characterized by symptoms such as emotional exhaustion, depersonalization, or a lack of personal accomplishment [3]. In turn, STS may be defined as a psychological response to very specific type of

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stressor in work environment, namely an indirect (secondary) exposure to traumatic contents in professional contacts with traumatic stress survivors [2]. STS may be manifested by symptoms similar to posttraumatic stress disorder [2].

High prevalence of job burnout was demonstrated across various occupational groups, reaching up to 67% for burnout in the community of mental health workers [4]. The prevalence of STS was found to vary from 15.2% among social workers [5] to 19.2% among U.S. mental health providers working in military [6], and up to 39% among juvenile justice education workers [7]. Results of a recent meta-analysis by Cieslak and colleagues [8] indicated strong associations between job burnout and STS among human services professionals. Unfortunately, the vast majority of studies investigating this relationship is of cross-sectional design; therefore, there is no evidence clarifying whether job burnout leads to STS, STS leads to job burnout, or this relationship is bi-directional (i.e., whatever develops first, increases the likelihood of developing another type of consequences). Establishing what comes first in the job burnout-STS relationship could be an essential step guiding prevention, treatment, and education programs for human services professionals, enabling them to reduce negative consequences of work stress. To fill this void, our two longitudinal studies investigated the directions of the relationships between job burnout and STS.

### Job Burnout

Although there are many conceptualizations of job burnout [9], the three-factor model [3] and the two-factor model [10] have been most commonly used. Job burnout has been traditionally conceptualized as encompassing three dimensions, emotional exhaustion, depersonalization, and a lack of personal accomplishment [3]. However, several work-related stressors and outcomes are more strongly correlated with emotional exhaustion and depersonalization than with a lack of personal accomplishment [11], whereas a lack of personal accomplishment forms strong associations with personal resources, e.g. self-efficacy [12]. In a response to findings showing a distinct function of a lack of personal accomplishment compared to other two burnout components, Demerouti et al. [10] proposed the two-factor model of job burnout, accounting for exhaustion and disengagement components. Exhaustion refers to the affective, physical, and cognitive states whereas the disengagement refers to distancing oneself from the entire spectrum of work-related aspects, e.g., job tasks, co-workers, work in general [10]. The present study examines the components that are strongly associated with work-related stressors; therefore, we used the two-factor model.

Research has consistently shown the associations between job burnout and work-related factors. Meta-analytical studies found significant relationships between job burnout and risk factors such as high job demands (e.g., workload, role conflict) or low job resources (e.g., control, autonomy at work) [11,13]. Another important predictor for job burnout is years of work experience [14–16]. Whereas the effects of many burnout determinants, such as job ambiguity or supervisor support, may vary across cultures [17], the links between years of work experience and work-related outcomes may be similar across the cultures [18]. Therefore, our research conducted in two cultures accounted for the predictor which may operate similarly across the countries, that is years of work experience.

### Secondary Traumatic Stress

Consequences of work-related indirect exposure to traumatic events have been conceptualized using several terms which have been used interchangeably. The constructs which are used most often include vicarious traumatization [19], compassion fatigue [2], and secondary posttraumatic stress disorder, also called secondary traumatic stress (STS) [20]. These constructs

[ncn.gov.pl/?language=en](http://ncn.gov.pl/?language=en)). The contribution of Aleksandra Luszczynska is supported by the Foundation for Polish Science, Master program (<http://www.fnp.org.pl/en/>). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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are overlapping, but they are not identical in content or theoretical foundations. STS accounts for three clusters of symptoms, such as intrusion, re-experiencing, and avoidance [20], whereas vicarious traumatization has core elements such as the professional's engagement at work and cognitive effects of indirect exposure to traumatic events [19]. In turn, compassion fatigue involves any emotional duress and burnout components [2]. In sum, the theoretical framework proposed by Bride et al. [20], captures STS as a construct, which is clearly distinct from job burnout, and therefore, the present research focuses on STS.

Indirect exposure to trauma is a necessary condition for developing STS. There are a number of indices measuring indirect exposure to traumatic events, including diversity, volume, ratio, and frequency [6]. Across these exposure indices, the frequency of indirect exposure has been identified as the most consistent determinant of STS [20–22]. Therefore, we included the frequency of indirect exposure as the determinant of STS.

Due to the high frequency of indirect exposure to traumatic events, some human services professionals are particularly at risk of developing STS. Professions that have been found to generate high risk of developing STS include social workers [5], child protective service workers [23], military health providers [6], and general trauma therapists [1]. Military behavioral healthcare providers, social workers, and trauma therapists were recruited to participate in our research.

Research on secondary traumatic stress faces some conceptual challenges. For example, McNally [24] argued that PTSD-like symptoms due to indirect exposure to traumatic materials may be an example of conceptual 'bracket creep' and that creating the construct of STS may be motivated by making treatment for PTSD-like symptoms reimbursable. This issue may be of particular relevance in cases when the diagnosis and subsequent reimbursed treatment of STS is considered. Importantly, the critique of STS concept is particularly strong in the context of people exposed to traumatic material via mass media [25]. However, DSM-V [26] clearly excluded exposure via electronic or printed media as a condition to develop traumatic stress disorder. Furthermore, if the aim of study is not to diagnose but to identify the determinants and consequences of the intensity or frequency of STS symptoms, the 'bracket creep' argument becomes weaker. Finally, there is no doubt that some extremely shocking, horrifying, and gruesome traumatic materials may be brought indirectly to professionals working with refugees [27], survivors of terrorist attacks [28], or military personnel [6]. Human services professionals may develop PTSD-like symptoms from repeated hearing and sharing in the details of the stories of survivors (for meta-analysis see 7). Using the concept of STS to professionals vicariously exposed to traumatic events may serve to de-stigmatize the reactions of first responders and reinforce the need for training and preventive care [29]. In sum, regardless the controversies, there are strong arguments for considering STS as one of key issues in well-being of human services professionals exposed to trauma through their work [6].

### Associations between Job Burnout and Secondary Traumatic Stress

Theoretical frameworks, addressing consequences of work-related stress among human services professionals indirectly exposed to trauma, assume that job burnout and STS may cooccur [30]. However, they do not provide suggestions about the uni- or bi-directional character of these relationships [30]. In contrast, more general stress frameworks such as conservation of resources theory (COR) [31] may provide arguments for a uni-directional relationship between job burnout and STS.

According to COR, the exposure to a broad range of stressors may deplete a broad range of resources and lead to resource exhaustion [31]. Work-related stressors are the examples of such broad range of stressors. This broad range of stressors may consequently lead to

exhaustion of a broad range of resources. Emotional exhaustion, which is a component of job burnout, may represent one of the facets of loss/exhaustion of resources. COR [31] suggests that a loss of a broad range of resources (including emotional exhaustion and reduced motivation to engage in various challenging tasks) may in turn increase the likelihood of developing specific negative consequences after exposure to subsequent specific stressors [31]. STS and indirect exposure may represent such specific consequences and stressors, respectively. An indirect exposure to traumatic stress may lead to the depletion of a relatively limited amount of resources (compared to a loss of resources following a broad range of work-related stressors). After a secondary exposure to a traumatic event, the availability of some resources should remain unaffected (e.g. organizational support, autonomy). Therefore, secondary exposure and its consequences such as STS may have relatively small effects on subsequent burnout. To the best of our knowledge, there have been no longitudinal studies evaluating two competing models, assuming that burnout leads to STS or that STS leads to burnout. Van der Ploeg and Kleber [32] tested only one of the two competing models and found that symptoms of post-traumatic stress at Time 1 might lead to emotional exhaustion at Time 2. Another longitudinal study indicated that job burnout at Time 1 led to depression at Time 2 [33]. Overall, cross-sectional studies indicated a strong association between job burnout and STS [8]. As experimental studies inducing either job burnout or STS are not an option from obvious ethical reasons, longitudinal studies analyzing the two competing models could bring us closer to answer the question of the directions in job burnout-STS associations. Importantly, a recent meta-analysis [8] indicated that the job burnout-STS associations are moderated by the country and the language in which the measurement is taken. Therefore, investigation of the directions in the job burnout-STS associations needs to be conducted across cultures.

### Aims of Present Studies

We tested the directions of the associations between job burnout and STS. The investigation was conducted in two independent samples of human services professionals, exposed to work stress and indirectly exposed (through their clients) to traumatic events. In particular, we explored three alternative hypotheses:

1. Job burnout at Time 1 would predict STS at Time 2 whereas STS at Time 1 would not predict job burnout at Time 2.
2. STS at Time 1 would predict job burnout at Time 2 whereas job burnout at Time 1 would not explain STS at Time 2.
3. Job burnout at Time 1 would explain STS at Time 2, and STS at Time 1 would predict job burnout at Time 2.

The three hypotheses were tested in a longitudinal study enrolling the U.S. behavioral healthcare providers working with military personnel suffering from trauma. Next, the findings were replicated in a sample of Polish human services professionals working with civilians exposed to various traumatic experiences.

### Study 1

#### Method

**Participants.** In Study 1, data were collected among behavioral and mental healthcare providers, working with the U.S. military personnel. Professionals meeting the following criteria were included: (a) working at least one year as a behavioral healthcare provider, clinical

psychologist, counselor, or social worker; (b) providing services for military personnel; and (c) experiencing indirect exposure to traumatic stress through their work.

In total, 294 providers met the inclusion criteria and completed the online survey at Time 1 (T1). Participants' mean age was 48.87 (SD = 12.76). Table 1 displays further demographic information. Six months later (Time 2; T2), 135 professionals (mean age = 50.62 years old [SD = 12.58]) completed the follow-up measurement. Among those who provided their data at T2, there were 50 clinical psychologists (37.0%), 39 counselors (28.9%), 29 social workers (20.7%), and 9 healthcare providers (6.7%). Respondents had been exposed to indirect traumatic events such as life threatening illness or injury (91.9%), military combat (91.1%), sudden unexpected death of someone close (90.4%), sexual assault (87.4%), physical assault (85.9%),

transportation accidents (83.7%), natural disasters (68.9%), and life threatening crime (57.0%). Measurements. Participants completed a set of questionnaires assessing job burnout, STS, and demographic information at T1 and T2.

**Job burnout:** The Oldenburg Burnout Inventory (OLBI) [34] is a 16-item questionnaire used to assess exhaustion (eight items) and disengagement (eight items). Respondents rate the degree of agreement for each item on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items included “During my work, I often feel emotionally drained” and “Lately, I tend to think less at work and do my job almost mechanically.” Cronbach’s alpha coefficients were .81 at T1 and .85 at T2 for the exhaustion subscale and .85 at T1 and .86 at T2 for the disengagement subscale.

**Secondary traumatic stress:** The Secondary Traumatic Stress Scale (STSS) [20] is a 17-item measure of the frequency of STS symptoms in the previous month. Responses are provided on a 5-point scale ranging from 1 (never) to 5 (very often). Sample items included “It seems as if I was reliving the trauma(s) experienced by my patient(s)”, “I had little interest being around others”, and “I felt jumpy.” Cronbach’s alpha was .93 for both T1 and T2.

**Indirect exposure to trauma:** The Secondary Trauma Exposure Scale [6] is a list of 10 events. It was designed to measure indirect exposure to traumatic stress among behavioral healthcare providers. Participants indicate whether they have experienced each event (e.g., natural

Table 1. Descriptive Statistics for Demographics for Study 1 (U.S. Data) and Study 2 (Polish Data).

Measure Levels Study 1 Study 2

Time 1 Time 2 Time 1 Time 2

Gender

Female 66.3% (195) 71.1% (96) 76.3% (232) 79.9% (155)

Male 33.7% (99) 28.9% (39) 22.7% (69) 18.6% (36)

Relationship status

In long-term relationship 76.2% (224) 72.6% (98) 73.7% (224) 77.3% (150)

Not in long-term relationship 21.4% (63) 25.2% (34) 25.7% (78) 22.2% (43)

Highest degree

High school 0.3% (1) 0 (0%) 20.4% (62) 18.0% (35)

Associate’s degree 0.3% (1) 0 (0%) - -

Bachelor’s degree 2.0% (6) 1.5% (2) 21.4% (65) 19.1% (37)

Master’s degree 45.2% (133) 51.1% (69) 56.6% (172) 61.3% (119)

Doctorate degree 52.0% (153) 47.4% (64) 1.0% (3) 0.5% (1)

Note. Sample size for Study 1 at T1 = 294. Sample size for Study 1 at T2 = 135. Sample size for Study 2 at T1 = 304. Sample size for Study 2 at T2 = 194. Some percentages did not add up to 100% because of missing data. Long-term relationship included married couples and couples in a committed relationship.

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disaster, sexual assault, military combat, exposure to a war-zone) through their clients. The frequency of indirect exposure was measured by referring the list of events with one item on a 7-point scale ranging between 1 (never) to 7 (every day).

**Demographics:** Participants completed background questions such as gender, age, work experience in years, education, type of profession, and relationship status.

**Procedures.** The Institutional Review Board at the University of Colorado Colorado Springs approved this study. The recruitment procedures were described elsewhere [6,35,36]. Participants were asked to indicate that they agreed to participate on the online informed consent form before they started answering the survey. Six months after completion of the T1 survey, professionals who agreed to participate in the T2 survey received an email invitation and a link to the T2 online survey. The mean time between the T1 and T2 was 195.80 days (SD = 20.00).

**Analytical strategies.** To test the relationships between job burnout and STS, a crosslagged panel analysis was conducted using structural equation modeling with AMOS version 22 (IBM). The hypothesized model included cross-lagged associations between job burnout at T1 and STS at T2 and between STS at T1 and job burnout at T2 (see Fig 1). The T1 indicators of job burnout and STS were assumed to covary. The T2 indicators of job burnout and STS were also assumed to covary. Work experience (T1) and the frequency of exposure to indirect traumatic stress (T1) were included as the covariates of both STS (T1) and job burnout (T1). The latent variables representing job burnout at both measurement points were loaded by two observed variables, exhaustion and disengagement (Fig 1). The latent variables representing

STS at T1 and T2 were loaded by one observed variable, STS, measured at T1 or T2, respectively.

The hypothesized model was estimated using maximum likelihood procedure. Assumptions for univariate and multivariate normality were met. The following indices were used to evaluate the model-data fit: Root mean square error of approximation (RMSEA), cutoff < .10 [37]; comparative fit index (CFI), cutoff > .90 [38]; Tucker Lewis Index (TLI), cutoff > .90 [38]; and standardized root mean residual (SRMR), cutoff < .08 [38].

To test the directions of the relationships between job burnout and STS, the hypothesized model was compared with two nested models. In the first nested model the path representing the effect of STS (T1) on job burnout (T2) was constrained to zero. In the second nested model, the path representing the effect of job burnout (T1) on STS (T2) was constrained to zero.

All analyses were conducted in the sample of completers (N = 135). Missing data were replaced using imputation with the maximum likelihood estimation method [39,40]. Items of exhaustion at T1 and T2, disengagement at T1 and T2, STS at T1 and T2, the frequency of indirect trauma exposure, and work experience were included in the imputation. Little's test [41] showed that data were missing completely at random (MCAR) for items of STS at T1,  $\chi^2(9) = 7.46$ ,  $p = .59$ , STS at T2,  $\chi^2(53) = 54.48$ ,  $p = .42$ , exhaustion at T1,  $\chi^2(35) = 30.29$ ,  $p = .70$ , disengagement at T1,  $\chi^2(7) = 9.17$ ,  $p = .24$ , and disengagement at T2,  $\chi^2(11) = 8.27$ ,  $p = .69$ . However, items of exhaustion at T2 were not MCAR,  $\chi^2(32) = 57.08$ ,  $p = .01$ . Because only 0.74% of all data for exhaustion were missing at T2, we used the maximum likelihood estimation imputation for these items as well. In total, 0.49% of data were missing and imputed.

## Results

**Preliminary Analyses.** To examine whether the constructs of job burnout and STS were measured in a sufficiently distinctive way, Pearson's correlations for the items of the OLBI and the items of the STSS were calculated (r range: .05 to .43). The highest correlation between a What Comes First, Job Burnout or STS?

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job burnout item and an STS item was .43 (18.8% of shared variance), indicating that the two concepts were distinct (see a correlation matrix in [S1 Table](#)).

[Table 2](#) displays means, standard deviations, and Pearson's correlation coefficients for all study variables. Attrition analysis showed no significant differences between completers and dropouts in disengagement at T1,  $t(292) = 0.82$ ,  $p = .41$ , exhaustion at T1,  $t(292) = 0.90$ ,  $p = .37$ , STS at T1,  $t(292) = 0.14$ ,  $p = .89$ , age,  $t(288) = 0.08$ ,  $p = .94$ , gender,  $\chi^2(1) = 0.40$ ,  $p = .53$ , profession,  $\chi^2(3) = 0.28$ ,  $p = .96$ , relationship status,  $\chi^2(1) = 0.84$ ,  $p = .36$ , and education,  $\chi^2(4) = 4.89$ ,  $p = .30$ . All STS and job burnout indicators were correlated (r ranged from .48 to .80, all  $ps < .001$ ).

**Fig 1.** Standardized Coefficients in the Cross-Lagged Panel Analysis for the Model Examining the Directionality between Job Burnout and STS. The covariation between the error terms for disengagement at Time 1 and disengagement at Time 2 (dotted line) was added based on the modification

indices. This model represents the final model with the coefficient for the relationship between STS at Time 1 and job burnout at Time 2 constrained to zero.

The coefficients for the relationship between exhaustion and the job burnout latent variable were constrained to one. Values before the slash indicate values

for the Study 1, and those after the slash indicate the values for the Study 2. T1 = Time 1; T2 = Time 2. \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ .

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**Results of Cross-Lagged Panel Analysis.** To test the associations between job burnout and STS, a cross-lagged panel analysis was performed (see [Fig 1](#)). The analysis indicated that the data did not fit the hypothesized model very well with RMSEA = .169, CFI = .922, TLI = .831, and SRMR = .041. Based on the modification indices, we modified the hypothesized model by covarying error variances for disengagement at T1 and T2. Results for the modified hypothesized model showed acceptable model fit, RMSEA = .074, CFI = .986, TLI = .968, and SRMR = .041. This modified hypothesized model was used for further analysis and model comparisons. The results suggested that relationship between job burnout at T1 and STS at T2 was significant, whereas the relationship between STS at T1 and job burnout at T2 was not significant.

To further test the direction of the associations between job burnout and STS, the modified hypothesized model was compared with two nested models (see Table 3). The difference between the modified hypothesized model and the first nested model (with the path

Table 2. Means, Standard Deviations, Pearson's Correlations among Study Variables for Study 1 (below Diagonal) and Study 2 (above Diagonal).

Measure Mean (SD)

1 2 3 4 5 6 7 8 Study 1 Study 2 t

1. Emotional exhaustion at T1	-.69***	.68***	.49***	.68***	.60***	.04	-.02	2.54 (0.70)	2.82 (0.68)	3.61***
2. Emotional exhaustion at T2	.77***	-.58***	.66***	.57***	.62***	.09	.01	2.53 (0.76)	2.80 (0.60)	3.45***
3. Depersonalization at T1	.80***	.64***	-.74***	.52***	.45***	.02	-.07	2.35 (0.70)	2.71 (0.64)	4.75***
4. Depersonalization at T2	.67***	.76***	.77***	-.42***	.42***	.00	-.00	2.40 (0.76)	2.77 (0.65)	4.61***
5. STS at T1	.64***	.57***	.54***	.48***	-.79***	.17*	.10	1.88 (0.61)	2.33 (0.68)	6.28***
6. STS at T2	.59***	.67***	.52***	.55***	.75***	-.23**	.14	1.76 (0.62)	2.28 (0.69)	7.14***
7. Work experience in years at T1	-.09	-.03	-.10	-.10	-.10	.04	.15*	15.70 (10.38)	10.38 (8.52)	5.09***
8. Indirect trauma frequency at T1	-.19*	-.24**	-.31***	-.29***	-.13	-.18*	-.11	6.16 (1.12)	4.79 (1.74)	8.06***

Note. Correlations in lower diagonal region show values for U.S. data (Study 1). Correlations in upper diagonal region show values for Polish data (Study 2).

2). Sample size for Study 1: N = 135. Sample size for Study 2: N = 194. STS = secondary traumatic stress; T1 = Time 1; T2 = Time 2.

\*p < .05

\*\*p < .01

\*\*\*p < .001. t-tests are conducted for each variable between Study 1 and Study 2.

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Table 3. Goodness-Of-Fit Statistics for Comparisons Between the Modified Hypothesized and the Nested Models in Two Studies.

Study Model Description  $\chi^2$   $\chi^2/df$  NFI  $\Delta\chi^2$   $\Delta$ NFI

Study 1

The modified hypothesized model 20.90 1.74 .969 - -

First nested model: The path from STS (T1) to job burnout (T2) constrained to zero 21.77 1.68 .968 0.88 .001

Second nested model: The path from job burnout (T1) to STS (T2) constrained to zero 28.09 2.16 .959 7.19\*\* .011

Study 2

The modified hypothesized model 13.70 1.14 .984 - -

First nested model: The path from STS (T1) to job burnout (T2) constrained to zero 14.43 1.11 .983 0.74 .001

Second nested model: The path from job burnout (T1) to STS (T2) constrained to zero 17.69 1.36 .979 3.99\* .005

Note. The  $\Delta\chi^2$  indicates a change in a  $\chi^2$  from the modified hypothesized model. A significant  $\Delta\chi^2$  value indicates that the model was significantly different from the modified hypothesized model. STS = secondary traumatic stress; T1 = Time 1; T2 = Time 2.

\*\*p < .01

\*p < .05.

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representing the effect of T1 STS on T2 job burnout constrained to zero) was not significant. In contrast, the difference between the modified hypothesized model and the second nested model (with the path representing the effect of T1 job burnout on T2 STS constrained to zero) was significant. Therefore the second nested model should be rejected. Based on the results of the cross-lagged panel analysis, the first nested model with the relationship between STS at T1 and job burnout at T2 constrained to zero should be accepted as a final model.

## Discussion

Results of Study 1 provided support for the first hypothesis and indicated that the cross-lagged pathway from job burnout at T1 to STS at T2 represents the essential and significant link between the two variables. High job burnout at T1 predicted higher STS measured six months later. These results need to be cross-validated and replicated in the context of different professions, culture, and organizations. In Study 2, we recruited employees indirectly exposed to trauma, working in cultural and demographic contexts different from those in Study 1.

## Study 2

### Method

**Participants.** In Study 2, Polish healthcare and social workers providing services for civilians who had experienced traumatic events were recruited. Inclusion criteria were: (a) working for at least one year as a healthcare provider, social worker, or first responder; (b) providing services for civilians exposed to traumatic events; and (c) experiencing indirect exposure to trauma at work.

Three hundred and four professionals (mean age = 35.27 years old [SD = 8.43]) met the inclusion criteria and completed the online survey at Time 1 (T1). Table 1 displays demographic information. Of those who completed the T1 survey, 194 participants (mean

age = 35.10 years old [ $SD = 8.08$ ]) provided their data six months later (Time 2; T2). The T2 sample consisted of 87 healthcare providers (44.8%), 81 social workers (41.8%), and 23 other professions (11.9%). All participants were indirectly exposed to different types of traumatic events at work, such as life-threatening injury or illness (88.1%), physical assault (87.1%), sudden unexpected death of someone close (83.5%), transportation accidents (71.1%), sexual assault (50.5%), and natural disasters (30.4%). Only 7.2% of participants were indirectly exposed to combat-related traumatic events.

**Measurements.** Participants completed the same set of measures as in Study 1. All measures had acceptable reliability: for exhaustion we obtained  $\alpha$ s of .82 (T1) and .78 (T2); for disengagement  $\alpha$ s of .79 (T1) and .81 (T2), and for STS  $\alpha$ s of .92 (T1) and .93 (T2). As in Study 1, instructions for all instruments were modified; participants were asked to provide their responses in the context of work-related indirect exposure to traumatic events. Back-translation procedures were applied to develop the Polish versions of the questionnaires.

**Procedures.** The Institutional Review Board at the University of Social Sciences and Humanities, Warsaw, Poland approved the study. Data were collected using an online survey. Before participants started answering the online survey, they were asked to indicate whether they agreed to participate on the online informed consent form. The recruitment procedures were described elsewhere [35,36]. The mean time elapsed between the T1 and T2 was 162.35 days ( $SD = 39.51$ ).

**Analytical Strategies.** To test the relationships between job burnout and STS, we performed a longitudinal cross-lagged panel analysis using the same procedure and software as in Study 1 (see Analytical Procedures in Study 1). Assumptions of univariate and multivariate normality for structural equation modeling were met.

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In addition, to examine the consistency of the factor structure of the OLBI and the STSS in the U.S. sample (T1:  $N = 294$ ) and the Polish sample (T1:  $N = 304$ ), tests for measurement invariance were conducted using a series of confirmatory factor analysis, following the suggestions by Prince [42]. For the test of invariance of the OLBI, eight items for the emotional exhaustion subscale were assumed to load on the first latent variable, and eight items for the depersonalization subscale were assumed to load on the second latent variable. The two latent variables, representing emotional exhaustion and depersonalization, were assumed to covary. In the test of invariance of the STSS, five items from the intrusion subscale were assumed to load on the first latent variable, seven items from the avoidance subscale were assumed to load on the second latent variable, and five items from the arousal subscale were assumed to load on the third latent variable. The latent variables for these subscales were assumed to covary. Such hypothesized models were then compared with nested model assuming that factor loadings, variances, and structural covariances are equal across the two samples.

All analyses were conducted in the sample of completers ( $N = 194$ ). As in Study 1, missing data were replaced using imputation with the maximum likelihood estimation method. With gender and profession as references, the Little's test [41] showed that data were missing completely at random for items of STS at T1,  $\chi^2(177) = 191.08$ ,  $p = .22$ , STS at T2,  $\chi^2(188) = 201.88$ ,  $p = .23$ , exhaustion at T1,  $\chi^2(28) = 39.91$ ,  $p = .07$ , exhaustion at T2,  $\chi^2(25) = 30.07$ ,  $p = .22$ , disengagement at T1,  $\chi^2(21) = 17.01$ ,  $p = .71$ , and disengagement at T2,  $\chi^2(39) = 33.62$ ,  $p = .71$ . In total, 0.81% of the values were imputed.

## Results

**Preliminary Analyses.** Pearson's correlations among the OLBI items and the STSS items ( $r$  range: -.14 to .51) indicated that the highest correlation was .51 (25.8% of shared variance), suggesting that job burnout and STS are two distinct concepts (see a correlation matrix in [S2 Table](#)). [Table 2](#) displays means, standard deviations, and Pearson's correlation coefficients for variables in Study 2.

Attrition analysis showed no significant differences between completers and dropouts in disengagement at T1,  $t(302) = 1.22$ ,  $p = .22$ ; exhaustion at T1,  $t(302) = 0.09$ ,  $p = .93$ , STS at T1,  $t(302) = 0.59$ ,  $p = .55$ , age,  $t(275) = 0.65$ ,  $p = .52$ , profession,  $\chi^2(2) = 2.49$ ,  $p = .29$ , intimate relationship status,  $\chi^2(1) = 3.24$ ,  $p = .07$ , and education,  $\chi^2(3) = 5.63$ ,  $p = .13$ . However, there were more women among completers than among dropouts,  $\chi^2(1) = 4.61$ ,  $p = .03$ . STS and job burnout

indicators in Study 2 were significantly correlated, with  $r$  ranging from .42 to .79, all  $p$ s < .001. The levels of STS and job burnout at T1 and T2 were higher in Study 2 than the respective values obtained in Study 1 (see [Table 2](#)).

The test of measurement invariance for the OLBI between the U.S. sample and the Polish sample showed that good model-data fit for the hypothesized unconstrained model (with assumed 10 covariance between error variances),  $RMSEA = .050$ ,  $CFI = .924$ ,  $TLI = .900$ , and  $SRMR = .049$ . The hypothesized model without any constraints was significantly different from the nested model with factor loadings, variances, and structural covariances constrained to be equal,  $\Delta\chi^2 = 119.80$ ,  $p < .001$ ,  $\Delta NFI = .031$ . Additionally, the hypothesized model was significantly different from the nested model with variances constrained to be equal,  $\Delta\chi^2 = 93.04$ ,  $p < .001$ ,  $\Delta NFI = .024$ , and the nested model with the structural covariances constrained to be equal,  $\Delta\chi^2 = 14.70$ ,  $p < .01$ ,  $\Delta NFI = .004$ . However, the hypothesized model was not significantly different from the model with factor loadings constrained to be equal,  $\Delta\chi^2 = 19.76$ ,  $p = .14$ ,  $\Delta NFI = .005$ . Therefore, the nested model with factor loadings constrained to be equal was accepted, indicating that factor loadings of the OLBI were consistent across the two samples.

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Results of the test of measurement invariance for the STSS between the U.S. sample and the Polish sample showed good model-data fit for hypothesized unconstrained model (with assumed 10 covariance between error variances),  $RMSEA = .056$ ,  $CFI = .922$ ,  $TLI = .900$ , and  $SRMR = .039$ . The hypothesized model without constraints was significantly different from the nested model with factor loadings, variances, and structural covariances constrained to be equal,  $\Delta\chi^2 = 297.28$ ,  $p < .001$ ,  $\Delta NFI = .054$ , the nested model with factor loadings constrained to be equal,  $\Delta\chi^2 = 112.69$ ,  $p < .001$ ,  $\Delta NFI = .021$ , the nested model with variances constrained to be equal,  $\Delta\chi^2 = 166.99$ ,  $p < .001$ ,  $\Delta NFI = .031$ , and the nested model with structural covariances constrained to be equal,  $\Delta\chi^2 = 23.88$ ,  $p < .001$ ,  $\Delta NFI = .004$ . Thus, none of the nested models was accepted for the STSS. Qualitative inspection of factor coefficients showed that one item (“I felt emotionally numb”) positively loaded on the avoidance latent variable in the U.S. sample whereas the same item nonsignificantly loaded on the avoidance latent variable, which might have contributed the difference in the factor structure of the STSS across the samples.

Results of Cross-Lagged Panel Analysis. The cross-lagged panel analysis conducted for the hypothesized model (without the covariance between error terms for disengagement at T1 and T2) indicated poor model-data fit,  $RMSEA = .190$ ,  $CFI = .887$ ,  $TLI = .758$ , and  $SRMR = .053$ . As in Study 1, the hypothesized model was modified; the error terms for disengagement at T1 and T2 were assumed to covary. The results obtained for the modified hypothesized model yielded good model-data fit,  $RMSEA = .027$ ,  $CFI = .998$ ,  $TLI = .995$ , and  $SRMR = .026$ . This modified hypothesized model was used in further comparisons with the nested models. As in Study 1, to test the direction of the associations between job burnout and STS the modified hypothesized model was compared with two nested models (see [Table 3](#)). The difference between the modified hypothesized model and the first nested model (with the path representing the effect of T1 STS on T2 job burnout constrained to zero) was not significant. In contrast, the difference between the modified hypothesized model and the second nested model (with the path representing the effect of T1 job burnout on T2 STS constrained to zero) was significant. As in Study 1, the second nested model should be rejected. In sum, the results of the cross-lagged panel analysis suggested that the first nested model with the relationship between STS at T1 and job burnout at T2 constrained to zero should be accepted as a final model.

## Discussion

The results of Study 2 were consistent with the findings obtained in Study 1. Overall, a higher level of job burnout at T1 led to a higher level of STS at T2. In contrast, levels of STS at T1 did not predict job burnout at T2. Findings obtained among Polish healthcare and social workers providing services for civilians who had experienced traumatic events were similar to results obtained among the U.S. behavioral and mental healthcare providers working with the military personnel.

## General Discussion

The results of the two longitudinal studies provided new insights into the nature of the relationships between job burnout and STS. In particular, we found that job burnout may increase

a risk of developing STS, but STS symptoms are unrelated to job burnout at follow-ups. The cross-lagged panel analyses of the U.S. and Polish samples of human services professionals who were indirectly exposed to traumatic events at work yielded consistent findings. The relationship between job burnout and STS seems to be unidirectional, with job burnout being a potential “gateway” outcome, enhancing the risk of developing STS.

Our investigation is one of the first to examine the directions in the associations of two core job-related outcomes affecting human services professionals working with clients exposed to What Comes First, Job Burnout or STS?

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traumatic events [3–5]. As such, it provides theorists and researchers with clues regarding the utility of existing models or frameworks, which account for both job burnout and STS symptoms [2,30]. The study findings reinforce arguments for including a unidirectional path from job burnout to STS into the theoretical models.

The findings are in line with the assumptions made in COR theory [31]. COR suggests that personal and environmental resources are depleted due to excessive expenditure to cope with a broad range of stressors (which may include work-related stressors) and their direct consequences (such as high levels of job burnout). This excessive expenditure leaves only few resources to cope with the further perpetual exposure to indirect trauma, making human services professionals susceptible to the development of STS symptoms. Previous studies found that job burnout relates to decline or low levels of various resources [43,44]. Our findings imply that loss spirals due to high levels of job burnout and limited resources remain critical to deal with indirect exposure to traumatic events. To break the loss spirals, new resources should be developed through prevention or treatment programs for human services professionals. Unfortunately, the present research does not provide an insight about the type of resources, which could be main target of such prevention or treatment program. Previous research indicated that resources may include several organizational factors such as caseload size or diversity [30], which are difficult to change, but they may also include modifiable factors such as control beliefs or self-efficacy beliefs [21,30]. Recent meta-analyses indicated that such modifiable beliefs about one’s own ability to deal with stress and its consequences are linked to lower levels/a reduction of job burnout [12]. Therefore, self-efficacy and control belief may be included in resource-building prevention program for professionals at risk for burnout and subsequent STS. Future research may aim at conducting evaluations of effects of such programs on burnout (and consequently on STS).

Although the associations between job burnout and STS were similar in both studies, there were a few differences in parameters observed in the U.S. sample and the Polish sample. For example, the relationship between work experience and job burnout at T1 in the Polish sample was positive but negligible; in contrast, in the U.S. sample this association was significant and negative. Moreover, mean levels of job burnout and STS were higher in the Polish sample than in the U.S. sample. Unfortunately, it is not possible to elucidate whether the differences were due to cultural factors, differences in occupations of the samples, or the type of vicarious exposure (civilian vs military trauma). However, our findings are in line with previous research which reported higher levels of distress or ill health in Polish samples, compared with Western European or U.S. samples. For instance, Polish nurses had higher job burnout than Dutch nurses [45], higher stress and lower life satisfaction were found in a sample from general population drawn from Poland compared to a German sample [46], higher anxiety and depression were found in Polish college students compared to the students from the U.S. [47], and being Polish was a predictor for stronger PTSD among firefighters compared to being Czech, Italian, German, Spanish, Swedish, or Turkish [48]. Future research needs to clarify the sources of such differences, such as cultural factors, organizational factors, occupation-specific tasks and resources. Furthermore, the differences in the findings obtained in the samples from Poland and the U.S. may be due to measurement issues. The test of measurement invariance of the STSS revealed that the factor structure of the STSS was different between the U.S. sample and the Polish sample. Again, the present study provides a limited insight into the cause of such differences. Differences in occupation, types of indirect exposure to trauma, availability of support systems for professionals, and their training could contribute to divergence of the factor structure of STSS in Poland’s and the U.S. samples. It is outside of the scope of the present research

to distinguish the effects of these factors on the factor structure in the two samples. Future research should address this issue more comprehensively.

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Although our data are suggestive of a causal path from job burnout to STS, correlational studies provide very limited arguments for causation. Although ethical concerns prohibit us from conducting experimental manipulations of either of the core constructs, larger scale natural experiments could be conducted to strengthen the conclusions. This study relied on the use of self-report measures, which, although relatively easy to obtain, are subject to a host of concerns. Clarke et al. [49] echoed such a concern regarding measures of depression in critiquing their randomized trial. Behavioral measures, other-ratings (including diagnostic interviews), and personnel records offer opportunities for more veridical measurement strategies and minimize artifacts such as mono-method bias. Finally, although our sample was somewhat diverse, the generalization across cultures and occupations would be premature.

In conclusion, our investigation showed that job burnout led to an increased frequency of STS symptoms at 6-month follow-up, but the levels of STS symptoms were not predictive of job burnout levels. The findings are robust, as cross-lagged panel analyses yielded similar results in two samples recruited in two different cultures, among workers performing various types of human services professions, and in the context of indirect exposure to military and civilian trauma. Our findings advance the knowledge of the process involving these two outcomes with the implications to theories explaining the effects of indirect traumatization as well as the prevention and may inform treatment programs dedicated to human services professionals dealing with traumatized clients.

### Supporting Information

S1 Table. Correlation Matrix among the OLBI Items and the STSS Items in the U.S. Sample at Time 1. OLBI = Oldenburg Burnout Inventory; STSS = Secondary Traumatic Stress Scale.

$p < .05$ ;  ${}_p < .01$ ;  ${}_{p} < .001$ .

(PDF)

S2 Table. Correlation Matrix among the OLBI Items and the STSS Items in the Polish Sample at Time 1. OLBI = Oldenburg Burnout Inventory; STSS = Secondary Traumatic Stress

Scale.  $p < .05$ ;  ${}_p < .01$ ;  ${}_{p} < .001$ .

(PDF)

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### Author Contributions

Conceived and designed the experiments: KS AL CCB RC. Performed the experiments: KSML ES JB CCB RC. Analyzed the data: KS RC. Wrote the paper: KS ML ES JB AL CCB RC.

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