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14. ABSTRACT Our goal is to design and validate an inventory to assess multiple dimensions of PTSD-related functional impairment experienced by active duty service members and veterans. A series of focus groups and individual assessments using interviews and self-report questionnaires were used to understand the multiple domains of functional impairment. Utilizing this information, the 80-item Inventory of Psychosocial Functioning (IPF) was developed, as well as a brief 14-item version. The psychometric properties of these inventories are being tested in Phase 3. Data collection for Phase 3 is near completion. By creating and validating an inventory to assess PTSD-related functional impairment we hope to offer a useful tool for clinicians, researchers and military leaders. This measure will have enormous value in identifying individuals with significant levels of impairments across multiple domains and for promoting more efficient allocation of resources.

15. SUBJECT TERMS
Functional Impairment, PTSD

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INTRODUCTION

The goal of this project is to design and validate a psychometrically sound inventory of PTSD-related functional impairment for active duty service members and veterans. The inventory will assess multiple dimensions of functioning. This goal subsumes three specific objectives: (1) define and systematically operationalize each of the variables representing functional impairment; (2) collect data from an initial test development sample of veterans and conduct first-stage psychometric analyses; (3) cross validate results from the initial test development using an independent sample and to establish criterion-related validity.

BODY

In Year 4, during months 1 through 12, we collected data from 84 Veterans at the Boston VA Healthcare System, of which 66 (78.6%) were male, 17 (20.7%) were female, and 1 (1.2%) was transgender. Data have been entered for all the participants recruited thus far. The statement of work (SOW) stated data collection would be completed in Year 4 for Phase 3; however, due to slow recruitment of female Veterans in the previous year, we re-focused our recruitment efforts in Year 4 to maximize the enrollment of female Veterans to reach our goal of 15% female Veterans in our sample. At this time we have enrolled 13.5% of female Veterans in Phase 3 and data collection continues to be ongoing until we reach our goal of male and female representation in our sample.

In Year 4, during months 1 through 6, we successfully completed the remaining data collection for the test-retest portion of our study by collecting data from 52 Veterans, of which 46 (88.5%) were male and 6 (11.5%) were female. Data entry of the test-retest sample is also complete.

In Year 4, we collected data from 100 Veterans at the Pacific Islands VA Healthcare System, of which 87 (87%) were male and 13 (13%) were female. Data collection from the Pacific Islands VA Healthcare System site is complete. These data are currently being entered onto a secure VA network at the Boston VA Healthcare System.

In Year 4, we completed data collection on the active duty sample of 1,800 US Army soldiers. These data were entered by staff at Walter Reed Army Institute of Research (WRAIR).

Data Analyses

During Year 4, during months 1 through 12, we have conducted preliminary analyses of the data with the assistance of Frank Weathers, PhD and Carole Lunney, M.A. Of the Veteran sample recruited at the Boston VA Healthcare System (n = 84) during Year 4, 38 (45.2%) met criteria for PTSD measured using the PTSD Checklist (PCL, Weathers et al., 1993). Functional impairment, measured using the mean score from the Inventory of Psychosocial Functioning (IPF, Marx et al., 2009), correlated significantly with PTSD symptom severity, $r = .62$, $p < .001$. Individuals meeting diagnostic criteria for PTSD had overall mean IPF scores of 3.84 ($SD = .79$), whereas individuals not meeting diagnostic criteria for PTSD had significantly lower overall mean IPF scores ($M = 2.81$, $SD = .85$) $t(81) = -5.58$, $p < .001$. The mean IPF score also correlated significantly, $r = .59$, $p < .01$, with Major Depression symptom severity, assessed using the Patient Health Questionnaire (PHQ, Spitzer et al., 2000). Individuals meeting diagnostic criteria for Major Depressive Disorder had overall mean IPF scores of 4.10 ($SD = .61$), whereas individuals not meeting diagnostic criteria for Major Depressive Disorder had significantly lower overall mean IPF scores ($M = 2.94$, $SD = .89$) $t(81) = -5.98$, $p < .001$.

KEY RESEARCH ACCOMPLISHMENTS

- Phase 3 data collection of female Veterans is ongoing.
- Phase 3 test-retest data collection is complete.
- Phase 3 data collection from the Pacific Islands VA Healthcare System is complete.
- Phase 3 data collection of the active duty sample is complete.

REPORTABLE OUTCOMES

Publications

1. Holowka, D. W, & Marx, B. P. (2012) Assessing PTSD-related functional impairment and quality of life. In: Beck G. Sloan DM (Eds.), *Oxford Handbook of Traumatic Stress Disorders.* Forthcoming. USA: Oxford University Press.

2. Rodriguez, P. , Holowka, D. W., & Marx, B. P. (in press). Assessment of posttraumatic stress disorder-related functional impairment: A review. *Journal of Rehabilitation Research and Development.*

Poster Presentations:

3. Rodriguez, P., Holowka, D. H., Han, S. C., Schnurr, P., Lunney, C., Weathers, F., Sloan, D. M., Keane, T. M., Marx, B. P. (November 2012) Underreporting symptoms of PTSD: Associations with Self-Deception and Impression Management in a Veteran Sample. Poster submitted for presentation at the International Society for Traumatic Stress Studies 28th Annual Meeting, Los Angeles, CA.

4. Franz, M.R., Gorman, K.G., Lachowicz, M.J., Holowka, D.W., Rodriguez, P., Schnurr, P.P., Lunney, C.A., Weathers, F., Sloan, D.M., Keane, T.M., Marx, B.P. (November 2012). *Communication deficits as a mediator between PTSD severity and intimate relationship problems among combat veterans.* Poster submitted for presentation at the annual meeting of the Association for Behavioral and Cognitive Therapies, National Harbor, MD.

CONCLUSION

By creating and validating an inventory to assess PTSD-related functional impairment--as they are perceived and reported by active military personnel and veterans--we hope to offer a useful tool for clinicians, researchers and military leaders. A measure of PTSD-related functional impairment will have enormous value from a health care perspective in terms of identifying individuals with significant levels of impairments across multiple domains and for promoting more efficient allocation of resources and efforts towards those who are in most need. Such a measure will also assist with mental health-related compensation and pension procedures and decisions by providing a means to more accurately assess mental health-related functional impairment.

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Marx B, P., Schnurr, P., Rodriguez, P., Holowka, D. W., Lunney, C., Weathers, F., Sloan, D., & Keane, T. M. (November 2009). *Development and Validation of a Scale to Assess Functional Impairment Among Active Duty Service Members and Veterans.* Paper presented at the 25th annual meeting of the International Society for Traumatic Stress Studies, Atlanta, GA.

Spitzer R., Kroenke, K., Williams, J. (1999). Validation and utility of a self-report Version of PRIME-MD: the PHQ Primary Care Study. *Journal of the American Medical Association, 282*, 1737-1744.

Weathers, F., Litz, B., Herman, D., Huska, J., & Keane, T. (October 1993). *The PTSD Checklist (PCL): Reliability, Validity, and Diagnostic Utility.* Paper presented at the Annual Convention of the International Society for Traumatic Stress Studies, San Antonio, TX.

APPENDICES

See appendix A for copies of publications.

JRRD Volume 49, Number 5, 2012
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Review of the assessment of functional impairment related to posttraumatic stress disorder

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Abstract—In 2010, the Department of Veterans Affairs and Department of Defense jointly published a new clinical practice guideline (CPG) for the management of posttraumatic stress. The CPG provides evidence-based recommendations for diagnosing and treating a spectrum of stress-related disorders. Included in the CPG were recommendations for assessing posttraumatic stress disorder (PTSD) and other stress disorder-related functional impairment. This article complements those CPG recommendations by providing information that may further guide clinicians in the assessment of functional impairment related to PTSD and other stress-related disorders. We briefly review some of the empirical literature on the association between PTSD and functional impairment and some of the more frequently used methods and measures for assessing functional impairment and introduce a new measure currently being developed by our group. We suggest that information obtained via patient self-report and/or clinician rating be supplemented whenever possible with collateral data from friends, family members, coworkers, or supervisors to provide a complete picture of current and premorbid functional status. Finally, we explore several important issues that we encourage clinicians to keep in mind when assessing functional impairment among Veterans and Active Duty servicemembers.

Clinical Trial Registration: ClinicalTrials.gov; PT074941, "Development and validation of a PTSD-related functional impairment scale; http://www.clinicaltrials.gov.

Key words: clinical practice guideline, Department of Defense, Department of Veterans Affairs, education, family, functional impairment, intimate relationships, occupational functioning, posttraumatic stress disorder, social functioning.

INTRODUCTION

Research has consistently shown posttraumatic stress disorder (PTSD) to be associated with impairments in functioning across a number of psychosocial domains [1]. Specifically, PTSD is associated with impairments in occupational and academic functioning [2–6], marital and family functioning [5,7–8], parenting [9–10], and friendships and socializing [11]. Additional studies have shown associations between PTSD and objective indicators of quality of life (QOL) such as homelessness and unemployment [12–13]. Such impairments are common among

Abbreviations: ASD = acute stress disorder; CAPS = Clinician-Administered PTSD Scale; COSR = combat and operational stress reaction; CPG = clinical practice guideline; DOD = Department of Defense; DSM-IV-TR = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision; GAF = Global Assessment of Functioning; IOM = Institute of Medicine; IPF = Inventory of Psychosocial Functioning; LIFE = Longitudinal Interval Follow-Up Evaluation; M = mean impairment score; OIF/OEF = Operation Iraqi Freedom/Operation Enduring Freedom; PTSD = posttraumatic stress disorder; QOL = quality of life; SD = standard deviation; VA = Department of Veterans Affairs; WHO = World Health Organization; WHODAS-II = WHO Disability Assessment Schedule II.

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populations at high risk for PTSD, such as military personnel deployed to combat [3,5–6,8–14]. Research suggests that these impairments are currently affecting many Veterans of the wars in Iraq and Afghanistan, (Operations Iraqi Freedom and Enduring Freedom) and are therefore important to identify and treat [15].

In 2010, the Department of Veterans Affairs (VA) and the Department of Defense (DOD) jointly published a new clinical practice guideline (CPG) for the management of posttraumatic stress [16]. This CPG provides evidence-based recommendations to clinicians for diagnosing and treating a spectrum of stress-related disorders including combat and operational stress reaction (COSR), acute stress reaction, acute stress disorder (ASD), acute PTSD, and chronic PTSD among servicemembers and Veterans.

The VA/DOD CPG recommends a comprehensive assessment of all relevant domains of functioning. It stresses the importance of a thorough assessment of functional impairment for several reasons: (1) to identify individuals who may be at risk for endangering themselves or others during or after deployment as well as after military discharge, (2) to promote accurate diagnosis, (3) to guide treatment planning by clarifying the domains in which the individual is experiencing impairment, and (4) to monitor changes in functioning during and after treatment.

This article is meant to complement the CPG recommendations for assessing stress disorder-related functional impairment and will provide information that may further guide clinicians in their assessment efforts. Although the VA/DOD CPG addresses several stress-related disorders, this article will focus mainly on the relation between PTSD and psychosocial functioning because the vast majority of prior research has examined this association. The information provided is based on these empirical findings from the extant literature as well as recent findings from an ongoing study of functional impairment among male and female Veterans. Specifically, we begin our article with a review of some of the recent empirical literature on the association between PTSD and impaired functioning across various psychosocial domains. We then provide specific recommendations on how to perform a comprehensive multimethod assessment of functional impairment and introduce a promising new assessment instrument. The article concludes with insights into several important issues related to assessing functional impairment that we encourage all clinicians to keep in mind when assessing functional impairment among Veterans and Active Duty servicemembers.

METHODS

We searched the U.S. National Library of Medicine's PubMed, PsycINFO, and PsycARTICLES databases for articles related to PTSD and functioning. We identified studies by searching the databases for references with the phrases "posttraumatic stress disorder" or "PTSD" (n = 10,109 English-language articles) or "functioning" in the title or abstract (n = 83). We reviewed the abstracts for the resulting articles to identify those relevant to our topic, and we also reviewed the references for the most relevant articles to identify additional studies of interest. Because we were unable to provide an exhaustive literature review in this article, we emphasized studies published since 2008 but also included a few earlier articles that were of particular relevance.

To identify articles related to impairment in specific domains associated with PTSD, we searched the PsycINFO and PsycARTICLES databases for articles with the search terms "posttraumatic" or "PTSD" in the major subject heading and "marriage," "parenting," "social functioning," "work," "education," "school," "finances," and "homelessness" in the subjects fields. We reviewed the results to determine whether the study addressed functional impairment related to PTSD. After identifying relevant screening measures, we performed additional searches to locate articles about the measures in question, including original validation studies.

This article also presents data collected through a grant awarded to Brian Marx, PhD, by the Department of Defense with the goal of designing and validating a new measure of functional impairment related to PTSD. This project was observational and cross-sectional. Phase 1 (n = 53) involved the use of focus groups to obtain information about the domains related to impairment among Veterans with PTSD. Phase 2's test development sample and hypothesis testing (n = 285) involved the use of clinical interviews and self-report questionnaires administered to male and female Veterans with representation from the Vietnam, Persian Gulf, and Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF) conflicts. For Phase 3, involving test validation and hypothesis testing, a sample of 1,800 Active Duty personnel and 300 Veterans from the Vietnam, Persian Gulf, and OIF/OEF conflicts were recruited.

RESULTS

Empirical Findings on Relation Between PTSD and Functional Impairment

Prior research has found strong and reliable associations between PTSD and functional impairment. Studies usually show these associations to be characterized by medium to large effect sizes [e.g., 9,15,17]. A comprehensive review of the literature on the association between PTSD and psychosocial functioning is beyond the scope of this article. For thorough reviews, please see Holowka and Marx [1], Schnurr et al. [18], Sayer et al. [19], and Norman et al. [20]. We briefly review some of the more recently published literature in this area as well as some of the findings from our current work. Specifically, we discuss findings describing the associations between PTSD and difficulties in intimate relationships, friendships and socializing, parenting, work and academic performance, and financial problems and homelessness.

Intimate Relationships

Recent research has found that the symptoms of PTSD frequently result in deleterious consequences for intimate relationships. Combat Veterans with PTSD have been reported twice as likely as non-PTSD Veterans to be divorced and three times as likely as those without PTSD to experience multiple divorces [21]. Studies have found that PTSD avoidance/numbing symptoms (e.g., anhedonia, emotional detachment from others, avoidance of trauma-related thoughts and feelings) are strongly associated with intimate relationship problems among Veterans [22–24]. In the context of intimate relationships, avoidance may initiate a cycle in which withdrawal and reluctance to discuss the past may strengthen feelings of uncertainty and loneliness. This, in turn, reinforces the partner's apprehension, which leads to further withdrawal on the Veteran or servicemember's part [23]. Monson et al. also theorized that difficulties with effective trauma disclosure and poor conflict resolution may lead to poor communication, which in turn exacerbates relationship problems [23]. Consistent with these hypotheses, Veterans in our ongoing study* commonly reported that PTSD avoidance and numbing symptoms were related to an increasing reluctance to participate in previously enjoyable activities with their partners. Many of these Veterans described a new preference for quiet, solitary activities, such as watching television or fishing, as well as a preference for activities they could perform without leaving the house.

Hyperarousal symptoms of PTSD have also been associated with greater intimate relationship difficulties. In particular, studies have found that increased anger, irritability, and aggression are related to problems in intimate relationships [17,25–26]. PTSD-related hyperarousal symptoms may also contribute to challenges that Veterans and their partners face when they engage in activities in public places. For example, PTSD-related hypervigilence may lead to Veterans avoiding crowds or prematurely or abruptly leaving social events when their partners are not ready to leave, sitting in certain places (e.g., near an exit or with their backs to the wall) when dining or in public, having problems regulating affect in public, and creating discomfort for their partners [27–28]. PTSD-related hyperarousal may also lead to problems related to driving; partners of Veterans with PTSD often complain of "road rage" and difficulty tolerating aggressive or risky driving, which can lead to frequent arguments [23,24].

It has been hypothesized that combat Veterans with PTSD may experience trouble processing threatening social stimuli because these events may activate "survival mode" reactions characterized by increased physiological arousal, hostile appraisals, and defensive behavior, which may have been adaptive in life-threatening contexts (e.g., combat), but are no longer adaptive and can lead to problems in their current contexts [17].

It is also important to keep in mind that relationships are cocreated and a spouse/partner may also be experiencing his or her own difficulties, which can contribute equally or more so to discord in the relationship. Finally, it is also worth noting that, in addition to acting as a causal factor, PTSD symptoms can worsen or intensify existing problems.

Friendships and Socializing

Data from our ongoing study show that avoidance and numbing symptoms also impair friendships. Specifically, we found that PTSD symptoms were associated with difficulties in sharing thoughts or feelings, being emotionally supportive, and settling arguments or disagreements with friends. Our data have also shown that, although PTSD-related hypervigilance interfered with meeting new people,

*Marx BP, Schnurr P, Rodriguez P, Holowka DW, Lunney C, Weathers F, Sloan D, Keane TM. Development and validation of a scale to assess functional impairment among active duty service members and veterans. 25th Annual Meeting of the International Society for Traumatic Stress Studies; 2009 Nov 5–7; Atlanta, GA.

a combination of irritability, feelings of detachment/estrangement, and hypervigilance were all related to impairment in friendships and socializing.

Parenting

Other recent studies have noted an association between PTSD and parenting difficulties [9–10,29]. Gewirtz et al. found that among male Vietnam Veterans PTSD symptoms were associated with decreased parenting satisfaction, impaired attachment with children, child behavior problems, and family violence [30]. PTSD symptoms were also associated with less effective parenting (e.g., inconsistent discipline and poor supervision). In trying to explain how PTSD symptoms result in parenting difficulties, investigators have suggested that avoidance and numbing symptoms may produce impaired relationships through emotional and physical detachment, lack of interest, and reduced monitoring and involvement with children [31], while hyperarousal symptoms may be associated with volatile or emotionally dysregulated parent-child interactions, especially in stressful situations [30].

Clinicians and researchers have identified the emotional numbing and hyperarousal components of PTSD as particularly disruptive of the Veteran's family life [28]. Galovski and Lyons suggested that fear and guilt over violent impulses acted on during combat situations and in the home, and current attempts to control these impulses, may lead the Veteran to avoid certain roles and activities that, in turn, affect the Veterans' overall ability to perform familial responsibilities and may further estrange them from their loved ones [28]. Such withdrawal and avoidance may create other problems in the home because the other parent or partner may struggle with the increased responsibility and burden placed on him or her [27–28].

Work and Academic Performance

Recent studies have confirmed the results of earlier studies demonstrating that PTSD symptoms can adversely affect work and academic performance, as well as the interactions with supervisors and peers in these domains [2,32–34]. Rona et al. found that, among a sample of U.K. military personnel, PTSD-related avoidance and numbing symptoms, followed by hyperarousal symptoms, were most strongly associated with poor performance at work, (e.g., less time on task, less accomplished, difficulty performing duties) [5]. Sleep disturbances have been shown to adversely affect work and academic performance, as evidenced by increased absenteeism and reduced productivity [35–36]. Fernandez-Mendoza et al. showed that sleep disturbances were associated with worse neuropsychological performance on tasks involving processing speed, executive control of attention, and visual memory, all of which can affect work and academic performance [37].

Other studies, including Heir et al. [34] andthe ongoing study by Marx et al., have confirmed that greater PTSD symptom severity is associated with an increased number of days absent from work. Other investigators have found that exposure to trauma among a sample of Active Duty military personnel predicted increases in PTSD symptoms, as well as job burnout, job stress, work-family conflict, and job dissatisfaction [38]. Research with women has also found negative associations between a history of interpersonal violence and job satisfaction and productivity [32]. Bolton et al. found that, once again, PTSD-related symptoms of avoidance, numbing, and hypervigilence can deleteriously affect academic performance [2], and research with adolescents has found associations between PTSD and school truancy and suspensions [39]. Adolescents with PTSD show slower processing of incoming information and difficulties in concentration and decision-making, which can have negative consequences for functioning in school [39].

Financial Problems and Homelessness

Parto et al. examined the prevalence of PTSD among urban residents and found that men and women living below the poverty level were more likely to screen positive for PTSD compared with those living above the poverty level [40]. They also found that, among participants at all income levels, people aged 30 to 47 years were more likely to report symptoms of PTSD than those aged 47 to 64 years. Women were more likely than men to screen positive for PTSD; white participants were more likely than African-American participants to endorse PTSD. Lastly, results showed that white women living below the poverty level were most likely to report PTSD symptoms [40].

An estimated 2.3 to 3.5 million people experience homelessness in the United States in a given year, and an estimated 26 percent of homeless adults are Veterans [41]. Women who have served in the military are three to four times more likely to become homeless than nonveteran women, though the reasons for this are unclear [41]. Results from a recent study of homelessness showed that, in general, male Veterans report homelessness because of job loss, discharge from an institution, mental health problems, and

alcohol or drug problems. In contrast, female Veterans usually report homelessness because of eviction, interpersonal conflict, and the loss of someone they depended on financially (either through disruption of that relationship or because of illness or death) [42]. Recent research focusing specifically on Veterans has shown that important risk factors for homelessness include extreme poverty, a postmilitary psychiatric disorder, and social isolation. Additional studies with homeless Veterans have found associations between PTSD and homelessness and financial loss [41,43]. Homeless female Veterans were more likely to screen positive for PTSD than nonhomeless female Veterans. These women were also more likely to have experienced military sexual trauma, to be unemployed, and to be disabled [41]. Importantly, Galea et al. have shown that there may be reciprocal associations between financial loss and PTSD [43]. Specifically, they showed that, in the aftermath of Hurricane Katrina, financial loss predicted PTSD diagnostic status 2 years posttrauma.

Conducting Assessment of Functional Impairment

We recommend that the assessment of functional impairment be accomplished using both clinical interviews and self-report instruments that assess functioning more broadly in addition to within specific domains. Although researchers have successfully developed a number of valuable methods that can reliably and validly assess functional impairment, the information derived from these methods may be affected by therapist-client rapport, memory biases, response biases, cultural biases, and clinical orientation. Further, reliance on a single assessment methodology or instrument may lead to an inaccurate understanding of the forms and degrees of functional impairment. As a result of these limitations, we recommend the use of multiple methods and measures. Such multimethod assessment takes advantage of each measure's relative strengths, overcoming the psychometric limitations of any single instrument and maximizing correct diagnostic decisions. We suggest that information obtained via patient self-report or clinician rating be supplemented with data from friends, family members, coworkers, supervisors, or teachers to provide a complete picture of current and premorbid functional status. Although these corroborating reports are also subjective, when combined with other data, they may strengthen the resulting conclusions.

Consistent with the CPG recommendation to monitor changes in functioning over time, past research has shown that the nature of the relation between psychiatric symptomatology and functioning may vary [13,44–45]. Changes in functioning over time have important implications for both the diagnosis and treatment of individuals with PTSD and other stress-related disorders. With respect to diagnosis, the time point at which functional impairment is noted will determine which diagnosis is allowed by the current classification scheme. Specifically, if dysfunction is noted within the first 30 days of exposure to a traumatic event (along with the other requisite symptoms), then the clinician would consider COSR or ASD as viable diagnoses. If dysfunction and associated symptoms are present for at least a month but less than 3 months, then the clinician should consider acute PTSD as a diagnosis. If dysfunction and associated symptoms are present for 3 months or longer, then clinicians should consider diagnosing the individual with chronic PTSD.

With respect to treatment, the practice of assessing functioning over time is beneficial to see how changes in QOL and functioning may or may not correlate with therapy-related changes in symptomatology. Such assessment also provides clinicians with information needed to make modifications to treatment intensity (frequency and duration), goals, mode (individual, group, couple, family), and specific strategies and techniques [46] for the purpose of meeting the changing needs of their patients. In some cases, PTSD symptoms may not change or decrease, but the person may learn new skills in therapy to cope more effectively with his or her symptoms. In these instances, a designated informant may observe improvements in functioning or QOL (an individual's subjective appraisal of his or her physical, mental, and social well-being) [18] before the Veteran. Some commonly used QOL measures include the World Health Organization (WHO) QOL Assessment [47], the QOL Inventory [48], and the Satisfaction with Life Scale [49]. For more detailed description of these measures, please see the **Table**.

Interviews

It is beyond the scope of this article to review all available interview measures. We review some of the more commonly used ones here. Specific questions within various clinician-administered diagnostic interviews assess the extent to which an individual is experiencing overall functional impairment related to PTSD and other stress-related disorders. For example, the Clinician-Administered PTSD Scale (CAPS) [65] and the Structured Clinical Interview

Table.
Measures of functional impairment and quality of life.

Measure	Domains Assessed	Description	Items
World Health Organization Disability Assessment Schedule-II (WHODAS-II) [50]	1. Understanding and communicating 2. Mobility 3. Self-care 4. Interpersonal 5. Work and household 6. Participation in society	Revised version of WHODAS (World Health Organization, 1988), WHODAS-II is measure of impairment because of military or health-related problems experienced in past 30 days. It provides profile of functioning across 6 activity domains, as well as general disability score. It can be administered as self-report questionnaire [48] or in interview form [55]. Available to those who complete and submit user agreement form.	36
Medical Outcomes Study Short Form (SF-36) [51]	1. Physical functioning 2. Role physical 3. Bodily pain 4. General health 5. Vitality 6. Social functioning 7. Role emotional 8. Mental health 9. Health change	Generic, widely-used measure of health status. 8 domains included in SF-36 were selected from 40 used in Medical Outcomes Study [52]. Short form is also available (SF-12). Available to those who complete and submit License Application Form.	36
Sheehan Disability Scale [53]	1. Work/school 2. Social 3. Family	Respondent rates difficulties due to symptoms in each of 3 domains on 10-point scale with verbal anchors. Author holds copyright to scale; permission to use may be obtained by contacting author.	3
Sheehan Work Disability Scale (SWDS)*	1. Physical work 2. Mental work (thinking, planning, using your brain) 3. Work closely and effectively with others	Respondent rates difficulties in occupational functioning due to his or her symptoms on 10-point scale with anchors. Author holds copyright to scale; permission to use may be obtained by contacting author.	3
Sheehan Disability Scale-W (SDS-W)†	1. Work/school 2. Social life 3. Family life/home responsibilities 4. Balance between personal life and career	Respondent rates extent to which he or she experiences problems in each of 4 domains due to symptoms on 10-point visual analog scale. Author holds copyright to scale; permission to use may be obtained by contacting author.	4
Health and Work Performance Questionnaire (HPQ) [54]	1. Absenteeism 2. Presenteeism	Self-report measure that assesses work-related consequences of illness including absenteeism, presenteeism, and workplace accidents. Available in public domain.	4
Work Limitation Questionnaire (WLQ) [55–56]	1. Work-related time management 2. Physical demands 3. Interpersonal/mental demands 4. Productivity demands	Evaluates level of limitation patient is experiencing in workplace due to health problems. Patient reports his/her ability or inability to execute work tasks and related loss of productivity. Available for noncommercial use on royalty-free basis.	25 (8-item version also available)
Work Productivity and Activity Impairment (WPAI) [57]	1. Hours absent from work because of health issues 2. Hours absent for other reasons 3. Hours worked 4. Effect of health on productivity 5. Effect of health on productivity outside of work	Assesses effect of health problems on work productivity. Available in public domain.	6
Social Adjustment Scale (SAS-SR) [58]	1. Work 2. Social/leisure activities 3. Relationships with extended family 4. Roles as spouse, parent, and member of family unit 5. Financial	Self-report that allows routine assessment of patient's social adjustment, especially in case of depression. It is also useful method as part of detection of even mild depressions, regular aftercare evaluation of outpatients, or as outcome measure in longitudinal studies. Does not ask for specific time period (e.g., in the past 30 d . . .). Available for purchase.	54
Dyadic Adjustment Scale (DAS) [59]	1. Dyadic satisfaction 2. Dyadic cohesion 3. Dyadic consensus 4. Affectional expression	Self-report measure of relationship adjustment. 5–10 min to administer. Can also be adapted into interview format. Available for purchase.	32
Life Stressors and Social Resources Inventory (LISRES) [60]	1. Physical health 2. Spouse/partner 3. Finances 4. Work 5. Home/neighborhood 6. Children 7, Friends and social activities 8. Extended family	Self-report measure that gauges ongoing life stressors and social resources as well as changes over time. Available for purchase.	200

Table.
Measures of functional impairment and quality of life.

Measure	Domains Assessed	Description	Items
Liebowitz Self-Rated Disability Scale [61]	1. School 2. Work 3. Family 4. Marriage/dating 5. Friendships 6. Other interests 7. Activities of daily living 8. Suicidal behavior	Self-report measure assessing current and most severe lifetime impairment due to social phobia in 8 domains.	11
Social Functioning Questionnaire [62]	1. Work and home tasks 2. Financial concerns 3. Relationships/family 4. Sexual activities 5. Social contacts 6. Spare time activities	Short self-report measure adapted from Social Functioning Schedule (SFS) to gauge respondent's perception of his/her social functioning. Available in public domain.	8
UCLA Social Attainment Scale (SAS) [63]	Social Functioning	Assesses level of social functioning. Used mostly in assessing functional impairment in psychotic populations. Available in public domain.	7
Quality of Life Inventory (QOLI) [48]	1. Health 2. Self-Esteem 3. Goals and values 4. Money 5. Work 6. Play 7. Learning 8. Creativity 9. Helping 10. Love 11. Friends 12. Children 13. Relatives 14. Home 15. Neighborhood 16. Community	Measure of general life satisfaction; it requires respondents to indicate level of importance of each area on 3-point scale and their level of satisfaction with that area of their life. Brief descriptions/definitions are provided of each domain prior to each pair of items. Available for purchase.	32
Inventory of Psychosocial Functioning (IPF)‡	1.Romantic relationships 2. Family relationships 3. Work 4. Friendships and socializing 5. Parenting 6. Education 7. Self care	New self-report instrument designed to assess functional impairment across spectrum of domains. Available for public use—please contact author.	80 items on full scale; 14 items on brief scale
Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) [64]	1. Physical health (13 items) 2. Subjective feelings (14 items) 3. Leisure time activities (6 items) 4. Social relationships (11 items) 5. General activities (14 items) 6. Work (13 items) 7. Household duties (10 items) 8. School/course work (10 items) 9. Medication (1 item) 10. Overall life satisfaction and contentment (1 item)	Self-report questionnaire intended to measure level of enjoyment/satisfaction across several elements of daily functioning over past week (5 d).	93

*Sheehan DV. Sheehan Work Disability Scale. 1983. Unpublished instrument.

†Sheehan DV. Sheehan Disability Scale (SDS-W). 2003. Unpublished instrument.

‡Marx BP, Schnurr P, Rodriguez P, Holowka DW, Lunney C, Weathers F, Sloan D, Keane TM. Development and validation of a scale to assess functional impairment among active duty service members and veterans. Proceedings of the 25th Annual Meeting of the International Society for Traumatic Stress Studies; 2009 Nov 5–7; Atlanta, GA.

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for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR), PTSD module [66] both contain questions designed to assess impairment more generally within social and occupational domains. A limitation of using this method of assessing functional impairment is that clinicians are unable to obtain more specific information about an individual's functioning across a number of different psychosocial domains (e.g., intimate relationships, parenting, friendships, occupational performance, self-care).

A more detailed assessment, on the other hand, provides an opportunity to explore the extent to which specific PTSD and other stress-related disorder symptoms are affecting specific areas of functioning. During a detailed assessment, the clinician can pose additional questions by psychosocial domain, thereby providing a better overview of the quality of multiple systems in the individual's life.

In order to more accurately assess a broad range of impairment, researchers have developed more comprehensive, standardized interviews to assess psychosocial functioning. A good example of one such instrument is the WHO Disability Assessment Schedule II (WHO-DAS-II) [50]. The WHODAS-II was developed to assess disability related to physical and psychiatric disorders experienced within the past 30 days and provides a profile of functioning across six activity domains—understanding and communicating, mobility, self-care, getting along with others, life activities, and participation in society—as well as an overall disability score. The WHO-DAS-II has been used with individuals with PTSD and other stress-related disorders; research has shown it to be useful in these populations [67–71]. A notable asset of the WHODAS-II is its relationship with the International Classification of Functioning, Disability, and Health [72], an internationally recognized system of classifying the consequences of physical and mental health conditions. The WHO has also developed and validated a self-report version of the WHODAS-II that can be used in instances when an interview is not feasible or efficient [50].

The Longitudinal Interval Follow-Up Evaluation (LIFE) [73] is also a standardized interview that was designed to assess the long-term course and effects of psychiatric disorders. Like the WHODAS-II, it evaluates and provides the clinician with information about an individual's functioning across multiple domains (e.g., work, relationships, sexual, household, recreation) as well as providing a global social adjustment score. Research has shown the LIFE to be useful when used with individuals with PTSD and other stress-related disorders [74–75].

Self-Report Measures

Currently, there are a number of self-report instruments available for use as part of an assessment battery (**Table**). In selecting a self-report instrument, clinicians may wish to consider the relative strengths and limitations of each scale. With respect to specific use with Veterans and/or servicemembers, most of these scales do not have norm-referenced scoring available. In addition, when assessing functional impairment, it is important to choose a measure that is not only valid and reliable but also sensitive to changes within individuals over time. This is necessary in order to detect minimal clinically important differences. Guyatt et al. have used the term "responsiveness" to describe a measure's ability to detect change within individuals over time [76]. Although, in general, reliable measures are likely to be responsive, the conventional method of assessing reliability using the correlation relating between-person variance to total variance may be misleading if it is used as the only index of reliability. As such, it is possible for instruments to be reliable but unresponsive to change; conversely, instruments may show poor reliability but excellent response to change over time [76]. Guyatt et al. suggested using an index of responsiveness, defined as an intraclass correlation coefficient that can be calculated as the ratio of the variance in participants' scores attributable to characteristics of the participant to the total variance in score (including variance attributable both to between-subject differences and to differences for the same subject over multiple repetitions of the instrument) [76]. This intraclass coefficient provides information about the extent to which multiple administrations of the instrument yield the same values under the same conditions in the same individuals [76]. To address this and other limitations of the available self-report instruments (e.g., difficulty in scoring, requiring causal attributions on the part of the respondent), we are developing a new measure of functional impairment: the Inventory of Psychosocial Functioning (IPF). This instrument has been created by the authors of this article in collaboration with several experts in PTSD and functional impairment among Veterans and servicemembers. The IPF was developed by first defining and systematically operationalizing each of the variables representing functional impairment. This objective was accomplished using a rational, classical test theory-oriented approach to instrument development. We then collected data from an initial test development sample

of Veterans and conducted first-stage psychometric analyses. Item and scale characteristics were derived and scrutinized to refine the item sets for optimal internal consistency and reliability, as appropriate. We are now in the process of crossvalidating results from the initial test development using several independent samples.

The IPF has both full (80 items) and brief (7 items) versions. The full IPF assesses impairment within the last 30 days across multiple psychosocial domains of functioning with sufficient breadth and depth without requiring respondents to make attributions regarding the cause of the impairments. Respondents answer each item by using a 7-point scale ranging from 1 ("never") to 7 ("always"). The IPF yields an overall functional impairment score as well as scores for seven domains: romantic relationships, family relationships, work, friendships and socializing, parenting, academic pursuits, and self-care. Higher scores indicate greater functional impairment. Because functioning over the past 30 days is assessed, respondents are instructed to skip sections of the instrument that are not currently relevant. Respondents take approximately 7 to 12 minutes to complete the full IPF, depending on the number of questions answered. The psychometric properties of the full IPF are being tested using several independent Veteran and servicemember samples.

Data collected from 457 Veterans show that the IPF has excellent reliability, based on the guidelines suggested by Cicchetti [77]. The IPF demonstrates excellent internal consistency, with a Cronbach alpha coefficient of 0.93 for the entire scale. The IPF subscales demonstrate good internal consistency, with Cronbach alphas ranging from 0.80 to 0.90. Additionally, the corrected item-total correlations by subscale range from $r = 0.18$ to $r = 0.78$. The overall mean IPF score for this sample is 3.27 (standard deviation [SD] = 0.95). The mean impairment scores (M) and SDs for each of the IPF scales are as follows: romantic relationships: M = 3.18, SD = 1.03; family: M = 3.64, SD = 1.33; work: M = 2.31, SD = 0.88; friendships and socializing: M = 3.19, SD = 1.22; parenting: M = 2.74, SD = 1.14; education: M = 2.80, SD = 0.934; self care: M = 3.36, SD = 1.11.

The overall IPF score correlates significantly with a number of other self-report measures of impairment and QOL, such as the WHODAS-II ($r = 0.71$), the Medical Outcomes Study 36-Item Short Form for Veterans ($r = 0.68$), the Sheehan Disability Scale ($r = 0.53$–0.57), and the QOL Inventory ($r = 0.59$) (all $p < 0.001$). Scores on the social and interpersonal IPF scales (i.e., romantic relationships, family, friendships and socializing, parenting) correlate significantly with similar subscales on other measures, with correlations ranging from $r = 0.30$ to $r = 0.61$ (all $p < 0.001$). Scores on the work and education IPF scales correlate significantly with scores on other similar scales, with correlations ranging from $r = 0.38$ to $r = 0.60$ (all $p < 0.001$). Scores on the IPF Self-Care subscale correlate significantly with several similar subscales in other measures, with correlations ranging from $r = 0.39$ to $r = 0.62$ (all $p < 0.01$). The overall IPF score correlates significantly with PTSD symptom severity, $r = 0.48$, $p < 0.001$, assessed using the CAPS for DSM-IV-TR. Similarly, participants meeting diagnostic criteria for PTSD had significantly greater overall IPF scores (M = 3.90, SD = 0.99) than participants who did not meet diagnostic criteria for PTSD (M = 3.08, SD = 0.82), $t(283) = -7.04$, $p < 0.001$.The overall IPF score also correlates significantly ($r = 0.53$, $p < 0.01$) with major depression symptom severity assessed using the module for major depressive episode (current) from the Mini-International Neuropsychiatric Interview. Similarly, relative to participants who did not meet diagnostic criteria for major depressive disorder (M = 2.89, SD = 0.74), participants who met diagnostic criteria for major depressive disorder had significantly greater overall IPF scores (M = 3.78, SD = 0.93), $t(281) = -8.97$, $p < 0.001$.

Idiographic Assessment

In addition to using well-validated interviews and self-report instruments, consistent with the CPG, we recommend that clinicians ask clients to provide a narrative description in their own words of changes within all relevant psychosocial domains of functioning. Doing so will allow the clinician to obtain more idiographic information about the nature of an individual's functional impairment. Following the patient's description, clinicians may ask about the subjective importance of each functional domain. For example, if a person is not performing occupational duties well, the clinician could ask, "How important is it for you to do your job well?" and "Was your job always important to you?" If the individual indicates that it is indeed important to perform his or her job duties well, then occupational functioning ought to be considered in treatment planning.

Next, it is important that clinicians determine whether the noted impairment is trauma-related. One of the techniques most helpful in determining whether an existing impairment is related to the stressor exposure is asking

explicitly about time of onset. Such questions can be worded simply, such as "When did you start having arguments with your wife? Did it start (or get worse) after [the event]?" In order for impairment to be potentially related to the stressor exposure, it must have either had an onset or worsened after the event. It is important to note that clinicians may wish to use caution in using the time of onset as the only indicator of whether the impairment is trauma-related or not. Time of onset is only a partial indicator. The clinician may wish to ask the Veteran if there are any other issues that could be associated with the impairment. For instance, domestic arguments could be more closely related to intoxication or other co-occurring conditions even if trauma exposure preceded their onset.

Once key functional impairments are identified and clearly linked to the index event, clinicians can ask more specific questions about the nature of the impairments and how the noted impairments are related to specific PTSD or other stress disorder-related symptoms. Furthermore, we suggest that clinicians identify which areas are relevant to each client (e.g., if the individual has children, then the clinician may wish to inquire about functioning in the parenting domain). One way to ask is, "How has your relationship with [your children] changed since the event?" This sample question can be adapted to assess other domains of functioning as necessary.

DISCUSSION

Important Considerations When Assessing Functional Impairment

Limitations of Current Diagnostic Classification System

In order to meet diagnostic criteria for PTSD and other disorders currently listed in the DSM-IV-TR, an individual must not only endorse the requisite number of PTSD symptoms but also report that these symptoms have resulted in "clinically significant distress or impairment in social, occupational, or other important areas of functioning" [78]. Although this criterion is satisfied by the report of either distress or impairment, it is unlikely for one to be present without the other. Although this still could change, the DSM-5 work group is aiming to maintain the clinical significant criterion part of the revised PTSD diagnostic criteria [79–80].

Data from our ongoing study has revealed strong, significant correlations between Veterans' self-rated level of functional impairment across several psychosocial domains (e.g., romantic relationships, family, parenting, friendships and socializing, work, education, self-care) and self-reported distress. Specifically, correlations between self-reported functional impairment and distress ranged from $r = 0.70$ to $r = 0.88$ ($p < 0.001$). Our findings suggest that clinicians may wish to consider the likelihood that dysfunction and distress usually go hand in hand. That being said, our findings also suggest that there may indeed be instances in which levels of dysfunction and distress may be incongruous among clients. This is precisely why a detailed and comprehensive assessment of functional assessment is necessary.

Another important point for clinicians to keep in mind is that functional impairment is not exclusive to individuals meeting full diagnostic criteria for PTSD or other stress-related disorders. Individuals who may be subthreshold, diagnostically speaking, or who report only some symptoms of a given disorder may also experience substantially impaired functioning [81–82]. One study found that individuals with PTSD evidenced 30 percent greater overall impairment in social, occupational, and family functioning compared with a group with subthreshold PTSD. Nonetheless, the subthreshold group also experienced substantial impairment, approximately four times greater than those without PTSD [82]. Other studies have found that individuals with partial PTSD showed levels of impairment similar to individuals who met full criteria [83], and those with full or subthreshold PTSD had similar degrees of social and work impairment [84].

Although functional impairment has been used by some researchers to refer more broadly to limitations in social and occupational spheres of life [85], DSM-IV-TR criteria do not make it clear how the symptoms may affect social, occupational, or other important areas of functioning, thereby making it difficult for clinicians to have a clear sense of what types of changes to look for in their assessments. Although the DSM-IV-TR states that symptoms must cause clinically significant distress or impairment in social, occupational, or other areas of functioning, the DSM-IV-TR does not specify what is meant by "clinically significant." This makes assessing the clinical significance criterion more difficult and requires a judgment on the part of the clinician. The DSM-IV-TR provides the Global Assessment of Functioning (GAF) as a tool for clinicians to assess the level of functioning. However, the GAF score has limited utility in the assessment of PTSD-related impairment for

Veterans. The GAF score is only minimally relevant to PTSD because of its emphasis on the symptoms of mood disorders and schizophrenia and its limited range of symptom content [86]. Another limitation associated with using the GAF identified by the Institute of Medicine (IOM) [87] is that, even though it combines symptomatology and social-occupational functioning into one score [88], these constructs may be individually distinct. Additionally, because the GAF is a single-item measure, its psychometric properties show mixed findings [89]. Given that the methods by which we measure psychiatric-related functional impairment have critical value from a healthcare perspective in terms of identifying individuals with the disorder and for promoting more efficient allocation of resources and efforts toward those who are in most need, the IOM committee recommended that the VA ultimately identify and implement an appropriate replacement for the GAF, although they did not specifically identify any such replacement [86].

Obtaining Collateral Reports

We suggest clinicians consider obtaining collateral information from family members and other third parties to determine the extent to which an individual's self-reported impairments rise to the level of clinical significance. Collateral information can be obtained by simply asking a spouse or family member (or any other individual who is close to the Veteran) to complete the same measure administered to the Veteran (e.g., the WHO-DAS-II) but instructing the spouse or family member to answer the questions based on their perception of how the Veteran is doing in each of those domains.

Concerns About Response Bias

Another important consideration is that some Veterans may exaggerate or even malinger symptoms of PTSD and associated functional impairment to support or maintain a claim for PTSD service-connection disability [90–91]. As such, any assessment protocol for assessing PTSD and associated impairments should include measures of response bias to assess overreporting or malingering. Possible measures include the Minnesota Multiphasic Personality Inventory-2 [92], Structured Inventory of Malingered Symptomatology [93], or Miller Forensic Assessment of Symptoms Test [94]. It is important, however, to keep in mind that no single measure is ideal for identifying those who malinger PTSD symptoms and that elevations on such indicators are not necessarily caused by intentional efforts to "fake bad" [95]. Additional possibilities for exaggerated profiles may be that such individuals are in greater distress or subjectively feel more distress than other patients [96–98].

Distinguishing Impairment from Symptomatology

It is not surprising that past research has shown an association between PTSD and functional impairment: these two constructs are conceptually intertwined. Generally speaking, a condition or behavior would not be labeled as a symptom if it were not causing some sort of difficulty. Nonetheless, the focus on impairment itself as an outcome is relatively new to the field. Beginning in 1980, with DSM, Third Edition [99], significant distress or functional impairment was formally considered a necessary criterion for psychiatric disorder.

The current CPG clearly directs clinicians to assess functioning as an important part of the clinical picture and as a necessary condition for diagnosis. Because functioning is largely defined in terms of social and occupational functioning, it is easy to see how many PTSD symptoms can lead to difficulties in performing social or work roles. As mentioned earlier, symptoms of numbing could easily lead to relationship difficulties, and it is easy to imagine how angry outbursts could cause trouble at work. However, in some cases it can be more difficult to distinguish the symptom from the impairment it causes. For instance, "difficulty concentrating" will only be evident if it disrupts some meaningful activity, and thus the impairment is more readily apparent but is effectively subsumed within the symptom. In contrast, other symptoms may be more egosyntonic and thus are less likely to be identified as impaired functioning by the patient. For instance, when asked whether they "make a special effort to avoid activities, people, or places" that remind them of the trauma, many Veterans reply that they have been avoiding reminders for so long that it no longer requires any effort at all. In such cases, although the symptom is not perceived as distressing, the impairment associated with it (i.e., withdrawal from meaningful activities) may be of clinical concern and thus important to assess. Finally, some symptoms may cause only transient or insignificant distress or impairment, and in such cases, it is unclear to what extent these symptoms ought to be considered in the diagnosis of PTSD or other stress-related disorders. The DSM-IV-TR simply suggests that the "symptoms cause significant distress or impairment," but in practice clinicians do not routinely assess the relative impairment of each symptom in

order to determine whether it should be counted toward a diagnosis. Rather, most clinicians are more likely to assess overall level of functioning even though a more detailed assessment may provide a more accurate diagnosis and a better treatment plan.

Given that comorbidity is common, some patients may have difficulty determining the extent to which their psychosocial difficulties are due to PTSD symptoms versus depression or substance abuse. In other cases, however, patients can be quite insightful about such differences, and thus we recommend asking them to provide a clearer picture whenever possible; however, these data ought to be interpreted with caution.

It is also important to note that, for some individuals, symptoms may only lead to impairment in certain contexts. In fact, it is widely believed that not only are certain symptoms normal, but under battlefield conditions, some of the behaviors frequently considered symptomatic are actually quite adaptive. For instance, it is not difficult to see how hypervigilance, efforts to avoid situations that may be harmful, and clear memories of past dangerous situations may in fact help keep military personnel alive and are therefore quite functional in the context of a war zone. Nonetheless, it is also understandable how such behaviors can lead to impairments in civilian life. Thus, the context and circumstances of the patient's life must be taken into account. This is where diligent assessment of functional impairment serves the crucial role of determining what constitutes a problem or symptom worthy of clinical attention.

Client's Personal Characteristics and Environmental Circumstances

While conducting assessments of functioning, it is important to remember that we may sometimes make assumptions of what can be reasonably expected of individuals based on relatively little information. Such assumptions must be checked against the client's history or self-report to avoid jumping to conclusions based on superficial data, which could lead to over- or underestimating past or future functioning without a solid basis in fact. Comparing one soldier to another may also be problematic. Although it may be easy at times to assume similar abilities among an ostensibly homogeneous cohort, we urge caution in making such assumptions and always encourage direct assessment.

Another related, but less conspicuous, pitfall in the assessment of functional impairment is that the metric by which we determine impairment may affect our overall assessment and may not be readily apparent. The simplest point of comparison is likely to the individual's level of functioning prior to the trauma, if such information is available. If not, self- or other report may be helpful in determining whether a decline in functioning has occurred. However, in cases where military personnel are younger, functional impairment may be more evident in terms of a deviation from expected developmental trajectories. For instance, failure to attend college would certainly not indicate impairment in the majority of the population, but for someone who had previously been an honor student with aspirations of graduate school, this could indicate a serious level of impairment. Thus, an inability to achieve goals that would previously have been thought well within reach could also be clinically meaningful.

CONCLUSIONS

VA and DOD's renewed focus on functional impairment in the assessment of stress-related disorders is encouraging. Although a necessary condition for a DSM-IV-TR diagnosis, functional impairment is all too often overlooked or given only cursory evaluation. Nonetheless, functional impairment is clearly important, perhaps even more so than other criteria given its status as a straightforward outcome. Although symptomatology may be the substance of the disorder, impairment defines its form. Ultimately, functional impairment may be the outcome we are most interested in ameliorating, and thus, paying specific attention to its assessment is crucial.

What we have provided here hopefully serves as a valuable companion to the CPG, drawing attention to issues that may complicate the assessment of functional impairment and providing more specific guidelines for its execution. We recommend a multimethod assessment of functional impairment using clinical interviews, self-report instruments, and narratives to collect broad functioning information and information within specific domains. We also suggest that information obtained via patient self-report or clinician rating be supplemented with data from friends, family members, coworkers, supervisors, or teachers to provide a more complete picture of current and premorbid functional status. Although these corroborating reports are also subjective, when combined with other data, they may strengthen the resulting conclusions.

Clearly, further research is necessary in this area to improve our methods of assessing functional impairment, to further evaluate risk and resilience factors for impaired functioning, and to explore treatment approaches that maximize gains in functional outcomes. Finally, it is our belief that continued implementation of the CPG recommendations will lead to further research in this area, as well as improved treatment for Active Duty military and Veterans alike.

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CHAPTER

21 Assessing PTSD-related Functional Impairment and Quality of Life

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Abstract

Previous research has shown that PTSD is associated with impairments in functioning across a variety of domains and decrements in quality of life. In this chapter, we review the literature on the assessment of PTSD-related impairments in functioning and quality of life. We first discuss the importance of assessing PTSD-related impairments in quality of life and functioning. We then review some important methodological concerns related to the assessment of these constructs. Finally, we review some of the most commonly used assessment tools and discuss recent efforts to develop and validate a new assessment tool to assess PTSD-related functional impairment.

Key Words: Trauma, posttraumatic stress disorder, functional impairment, quality of life, assessment

Assessing PTSD-related Functional Impairment and Quality of Life

According to the *Diagnostic and Statistical Manual for Mental Disorders* (*DSM*-IV; American Psychiatric Association [APA], 2000), in order for a posttraumatic stress disorder (PTSD) diagnosis to be rendered, the individual must not only endorse the requisite number of PTSD symptoms (i.e., at least one re-experiencing symptom, three avoidance and numbing symptoms, and two hyper-arousal symptoms) but also report that these symptoms have resulted in additional psychological distress and/or social or occupational impairment. Previous research has shown that PTSD is associated with impairments across a range of functional outcomes, including occupational functioning (e.g., Hoge et al., 2008; Resnick & Rosenheck, 2008; Rona et al., 2009), marital, family and interpersonal functioning (e.g., Kuhn, Blanchard, & Hickling, 2003; Rona et al., 2009; Sayers, Farrow, Ross, & Oslin, 2009) and subjective (e.g., Gudmundsdottir, Beck, Coffey, Miller, & Palyo, 2004; Paunović & Öst, 2004; Rapaport, Clary, Fayyad, & Endicott, 2005) and objective indicators (e.g., homelessness, unemployment) of quality of life (O'Connell, Kasprow & Rosenheck, 2008; Schnurr, Hayes, Lunney, McFall, & Uddo, 2006).

Although the majority of the research in this area is cross-sectional, there is some available research showing that PTSD and impairments in functioning and quality of life are prospectively related to one another (e.g., Golden-Kreutz et al., 2005; Koenen, Stellman, Sommer, & Stellman, 2008; Solomon & Mikulincer, 2007; Taylor, Wald, & Asmundson, 2006). Schnurr et al. (2006) found that increases in PTSD symptom severity were associated with increases in both psychosocial and physical health-related functional impairments. Lunney and Schnurr (2007) reported that clinically significant improvements in PTSD symptoms were associated with improvements in multiple domains of quality of life. Ramchand, Marshall, Schell, and

Jaycox (2008) found that, among survivors of community violence, greater PTSD symptoms within one week of the event predicted lower quality of life at 3 months posttrauma. In addition, quality of life at 3 months posttrauma predicted greater PTSD symptoms at 12 months posttrauma. These findings suggest a reciprocal relationship between PTSD and impairments in functioning and quality of life.

Further complicating our understanding of these associations is the fact that various PTSD symptoms appear to be differentially associated with functional impairments. Intrusive recollections, psychological distress caused by trauma reminders, sleep and concentration difficulties, and hyper-vigilence are the most frequently reported PTSD symptoms among those with functional impairments (Norman, Stein, & Davidson, 2007). Other research has found that PTSD reexpeeriencing symptoms have been associated specifically with impairments in occupational functioning (Taylor et al., 2006) as well as in play, learning, and creativity (Lunney & Schnurr, 2007). Avoidance and numbing symptoms have been associated specifically with impairments in parenting (Samper, Taft, King, & King, 2004), relationship distress and difficulties (e.g., Litz, 1992; Litz & Gray, 2002; Riggs, Byrne, Weathers, & Litz, 1998), role functioning impairments (Kuhn et al., 2003; Lunney & Schnurr, 2007), reduced self-esteem (Lunney & Schnurr, 2007), and physical health problems (Lunney & Schnurr, 2007; Woods & Wineman, 2004). Hyper-arousal symptoms have been associated with impairments in occupational and major role functioning (Kuhn et al., 2003; Taylor et al., 2006), as well as physical health problems (Kimerling, Clum, & Wolfe, 2000; Woods & Wineman, 2004).

A number of recent studies have compared the impact of PTSD and other anxiety disorders on functional outcomes. For example, Rapaport et al. (2005) found that individuals with PTSD reported functional impairments that were both more likely to be severe and more pervasive compared with those with other anxiety disorders. A recent meta-analysis of quality of life in anxiety disorders (Olatunji, Cisler, & Tolin, 2007) found large effect sizes for PTSD across multiple domains of quality of life. Although they found no differences in overall quality of life, they did find that impairments in some domains might be different across anxiety disorders. In particular, there was some evidence to suggest that not all anxiety disorders were associated with the same type and severity of impairments and that, in relation to other anxiety disorders, PTSD was always associated with lesser quality of life.

One of the striking features of the studies on functional outcomes associated with PTSD is the variety of instruments used to measure and describe these outcomes. For example, two recent reviews of quality of life in the anxiety disorders (Mendlowicz & Stein, 2000; Mogotsi, Kaminer, & Stein, 2000) included findings on subjective quality of life, psychosocial impairment, and physical health functioning. These authors noted that, although there is no agreed-upon definition of quality of life, there is broad agreement that a good measure should include subjective and objective assessments across a variety of domains. Given the possibility that particular symptoms or characteristics of different disorders may have distinctive effects on quality of life and functioning, these authors also suggested that researchers consider developing disorder-specific scales.

In the remainder of this chapter, we review the literature on the assessment of PTSD-related impairments in functioning and quality of life. We first discuss the importance of assessing PTSD-related impairments in quality of life and functioning. We then review some important methodological concerns related to the assessment of these constructs. Finally, we provide an overview of some of the most commonly used assessment tools, as well as discuss recent efforts to develop and validate a new assessment tool to assess PTSD-related functional impairment.

The Importance of Accurately Measuring PTSD-related Functional Impairment and Quality of Life

Our ability to adequately and competently assess PTSD-related functional impairment and quality of life has great importance for the field of PTSD research. First, the means and methods by which we assess PTSD-related functional impairment affect our understanding of how frequently the disorder occurs among those exposed to trauma (e.g., prevalence of the disorder). This point is highlighted by a recent discussion in the literature regarding the recent Dohrenwend et al. (2006) reanalysis of the National Vietnam Veterans Readjustment Study (NVVRS). In the original analysis of the (NVVRS) data, the prevalence of current PTSD was estimated at 15.2% and 8.5%, whereas the lifetime prevalence was 30.9% and 26.9%, respectively, for men and women. However, in Dohrenwend's reanalysis, after

adjusting for documentation of trauma exposure and level of reported impairment, Dohrenwend and colleagues reported prevalence estimates of 9.1% for current PTSD and 18.7% for lifetime PTSD among male Vietnam Veterans. Although the reanalysis lowered the prevalence estimates of PTSD among Vietnam Veterans, critics complained that the estimated rate of PTSD was still too high because the measure of functioning that was used (the Global Assessment of Functioning; GAF) was heavily skewed toward identifying impairment (Frueh, 2007; McNally, 2007). McNally (2007) stated that if the NVVRS reanalysis had used just a slightly more stringent cutoff score on the GAF for determining functional impairment, the prevalence of current PTSD would have dropped by 65% relative to the original NVVRS prevalence estimate. Importantly, the purpose of the Dohrenwend et al. study was not to recalculate the prevalence of PTSD in the NVVRS but to arrive at confirmation of warzone stress exposure variables.

Second, the means and methods by which we assess PTSD-related impairment in functioning and quality of life also are important for determining the extent to which various therapies may be considered beneficial for PTSD. For example, two recent large-scale VA Cooperative Studies examining the effects of group therapy (Schnurr et al., 2003) and individual cognitive-behavior therapy (CBT; Schnurr et al., 2007) showed that, although PTSD symptoms improved significantly, neither study found improvements on either the Medical Outcomes Study Short Form (SF-36; Ware & Sherbourne, 1992) or the Quality of Life Inventory (QOLI; Frisch, Cornell, Villanueva, & Retzlaff, 1992). These results suggest that either (1) the treatment did not improve functioning or quality of life, or (2) the measures that are currently being used to assess functioning and quality of life are not sufficiently sensitive to assess improvements in these constructs.

Finally, the means and methods by which we assess PTSD-related impairment also have implications for compensation and pension procedures and decisions for those contending that they are suffering impairments related to their PTSD. Related to this point are the recent findings of a committee convened by the Institute of Medicine (Institute of Medicine [IOM], 2007) to address ongoing concerns about the current procedures used to assess PTSD among Veterans in compensation and pension examinations. Among other things, the committee was asked to review the utility of the GAF in evaluating impairment associated with PTSD. The committee found that the GAF score has limited utility in the assessment of disability for PTSD compensation for Veterans. The score is only marginally relevant to PTSD because of its emphasis on the symptoms of mood disorders and schizophrenia and its limited range of symptom content. Given that the means and methods by which we measure psychiatric-related functional impairment have enormous value from a healthcare perspective in terms of identifying individuals with the disorder, and for promoting more efficient allocation of resources and efforts toward those who are in most need, the IOM committee recommended that the Department of Veterans Affairs ultimately identify and implement an appropriate replacement for the GAF, although they did not specifically identify any such replacement.

General Issues in the Assessment of Functional Impairment and Quality of Life

One of the first question that arises with respect to measurement of functional impairment and quality of life is whether the self-report methodology is adequate or appropriate. Katschnig (2006) noted that, especially among individuals with mental illness, the reliability of self-report may be questionable. Furthermore, transitory affective states associated with mental disorders may diminish the capacity to reliably report on one's own functioning and quality of life. Nonetheless, quality of life by definition must incorporate some level of subjective self-report into its assessment.

Although the functional impairment construct is central to the notion of what constitutes a mental disorder within the *DSM* classification system, the term is never explicitly defined anywhere in the *DSM*. An important consequence of this fact is that it introduces additional error into an already somewhat unreliable diagnostic process. Although diagnostic reliability is relatively good when using structured interviews or assessments, such formal assessments are not commonly conducted in most clinical settings. Under less rigorous conditions, reliability of diagnosis is less well understood. Of course, many factors are likely contributors to such variance, but it is reasonable to expect that a criterion lacking an operational definition is at least partly responsible. Anecdotally, many clinicians will ignore the functionalimpairment requirement and rather opt to endorse its proxy, "clinically significant distress," which some clinicians assume

through the mere presence at a clinical evaluation, thereby effectively ignoring the criterion altogether. Other clinicians may use any number of unstandardized metrics whereby they assign significance to impairment.

Interestingly, the functional impairment criterion is handled differently by the *DSM* and the World Health Organization (WHO) International Family of Classifications (Madden, Sykes, & Ustün, 2007). Within the WHO classification system, a distinction is drawn between diseases for which diagnoses are assigned and disability, which is considered a separate outcome, and the diagnosis itself. In the WHO system, disorders are defined by the *International Classification System of Disorders* (*ICD*), whereas disability is defined by the *International Classification Functioning, Disability and Health* (*ICF*) system (World Health Organization [WHO], 2001). Thus, in contrast to the *DSM* classification system, the *ICD* does not include a functional impairment criterion for PTSD (Ustün & Kennedy, 2009). Although the Impairment and Disability Study Group for *DSM-5* has recommended harmonizing the *DSM-5* classification with the WHO classification system (recommended changes as of May 2010), at present, it appears that *DSM-5* is poised to continue with the inclusion of distress or disability as a criterion for diagnosis of disorders in general and of PTSD in particular.

The fact that the WHO system classifies disability separately from disorders and/or diseases gives credence to the possibility that these outcomes may be separate, albeit related, but equally important sequelae to trauma exposure. Some, however, have argued that functioning may even be more important than symptomatology (e.g., McKnight & Kashdan, 2009). Although this may or may not be the case, if indeed symptoms are the cause of the impairments in functioning and quality of life, it is at least worth noting that improvements in symptomatology without concomitant gains in functioning may indicate that further intervention is needed. More specifically, it may not be possible to affect functioning and quality of life without treating symptoms, but treating symptoms may not be sufficient to ameliorate functional impairments or improve quality of life. At a minimum, functioning and quality of life are important outcome measures that are both relevant to the lived experiences of those suffering the aftermath of trauma exposure.

As noted earlier with respect to the controversy surrounding the NVVRS and compensation and pension benefits among Veterans, one of the most contentious issues with regard to the assessment of functional impairment involves the use of the standard measure of functioning in *DSM*, the GAF (Endicott, Spitzer, Fleiss, & Cohen, 1976). The GAF is a clinician-rated index of functioning that ranges from 0 to 100, with higher scores indicating better functioning. Originally developed to assess the severity of mood and psychotic disorder, this index has been incorporated into Axis V of the *DSM-IV* for the purpose of establishing an individual's level of overall functioning.

Given its origins, a primary concern about the GAF is that it may be only marginally relevant to PTSD because of its emphasis on the symptoms of mood disorders and schizophrenia and its limited range of symptom content. Another concern related to using the GAF is that, although it combines symptomatology and social-occupational functioning into one score (Goldman, 2005), these constructs may be orthogonal. Some research has suggested that GAF scores correlate more strongly with symptom severity than with functional impairment per se (Moos, Nichol, & Moos, 2002) and that they may not be very reliable at the individual level (Söderberg, Tungström, & Armelius, 2005). Additionally, because the GAF is a single-item measure, its psychometric properties are of concern (Nunnally, 1978). These limitations have led to revisions of the GAF, such as the Social and Occupational Functioning Assessment Scale (Goldman, Skodol, & Lave, 1992) and Mental Illness Research Education and Clinical Center Global Assessment of Functioning (Niv, Cohen, Sullivan, & Young, 2007).

Measures of Functional Impairment and Quality of Life

A large number of extant measures of functional impairment and quality of life are available for clinical and research purposes. Table 21.1 provides information regarding many of the most widely used measures. Among the more commonly used measures to assess functional impairment and quality of life are the World Health Organization Disability Assessment Scale-II (WHODAS-II; Epping-Jordan, Chatterji, & Ustün, 2000; World Health Organization [WHO], 1988), the Medical Outcomes Study Short Form 36-item (SF-36; McHorney, Ware, & Raczek, 1993; Ware, 1999) and the Quality of Life Inventory (Frisch et al., 1992).

Table 21.1 Measures of functional impairment and quality of life

Measure	Domains Assessed	Description	Items
World Health Organization Disability Assessment Schedule-II (WHODAS-II; WHO, 2000)	1. Understanding and communicating 2. Mobility 3. Self-Care 4. Getting along with others 5. Life activities 6. Participation in society	A revised version of the WHODAS (World Health Organization, 1988), the WHODAS-II is a measure of impairment due to military or health- related problems experienced in the past 30 days. It provides a profile of functioning across six activity domains, as well as a general disability score. It can be administered as a self-report questionnaire or in interview form.	36
Medical Outcomes Study Short Form (SF-36; Ware et al., 1993)	1. Physical functioning 2. Role functioning 3. Energy 4. Emotional well-being 5. Social functioning 6. Pain 7. General health 8. Health change 9. Mental Health	A generic widely used measure of health status. The 8 domains included in the SF-36 were selected from the 40 used in the Medical Outcomes Study (Stewart & Ware, 1992). A short form is also available (SF-12).	36
International Classification of Functioning, Disability and Health Checklist (ICF; WHO, 2003)	1. Functioning & Disability a. Body functions b. Mental functions 2. Contextual Factors a. Environmental Factors b. Personal Factors	The ICF is a comprehensive rating system for assessing health disability and functioning. The ICF checklist is a guideline for clinician-administered assessment of health status and health related functioning. It includes a brief questionnaire that may be administered by an interviewer of used as a self-report instrument. Its comprehensive nature requires sufficient training to administer effectively.	Extensive
Global Assessment of Functioning (GAF; APA, 2000)		The GAF is a clinician-rated barometer of overall functioning, taking into account symptom severity and social and occupational functioning. It is rated on a 100-point scale, divided into 10-point ranges. Examples of levels of symptomatology and impairment are provided as anchors.	1
Social and Occupational Functioning Assessment Scale (SOFAS; APA, 2000; Morosini et al., 2000)	1. Social 2. Occupational functioning	Similar in to the GAF, however it focuses exclusively on social and occupational functioning.	1
MIRECC GAF Department of Veterans Affairs (Niv et al., 2007)	1. Occupational 2. Social 3. Symptom	Another modification of the GAF, it was expanded to include 3 separate 100-point scales for each of constructs measured.	3
Sheehan Disability Scale (Sheehan, 1983)	1. Work/School 2. Social 3. Family	Respondent rates difficulties due to symptoms in each of 3 domains on a 10-point scale with verbal anchors.	3

(continued)

Table 21.1 Measures of functional impairment and quality of life (*continued*)

Measure	Domains Assessed	Description	Items
Sheehan Work Disability Scale (SWDS; Sheehan, 1983)	1. Physical work 2. Mental work (thinking, planning, using your brain) 3. Work closely and effectively with others	Respondent rates difficulties in occupational functioning due to his or her symptoms on a 10-point scale with anchors.	3
Sheehan Disability Scale for Women (SDS-W; Sheehan, 2003)	1. Work/school 2. Social life 3. Family life/home responsibilities 4. Balance between personal life and career	Respondent rates the extent to which he or she experiences problems in each of these four domains due to his or her symptoms on a 10-point visual analog scale.	4
The Longitudinal Interval Follow-up Evaluation (LIFE; Keller et al., 1987)	1. Work 2. Relationships 3. Sexual 4. Household 5. Recreation 6. Overall life satisfaction. 7. Family 8. Marital Status 9. Global Social Adjustment 10. GAF	An integrated system for assessing the long-term course of psychiatric disorders. The interviewer grades impairment for each domain on a monthly basis within a set time period (typically 6 to 12 months). Higher ratings denote more severe impairment.	13; additional items for different familial relationships
Range of Impaired Functioning Tool (LIFE-RIFT; Leon et al., 1999)	1. Work 2. Interpersonal relations 3. Satisfaction 4. Recreation	A brief version of the LIFE that can be administered by a clinician or trained layperson in 5 minutes. The interviewer must be able to distinguish impairment resulting from psychopathology versus other life issues (e.g., caring for a sick relative).	5
Health and Work Performance Questionnaire (HPQ; WHO, 2002)	1. Absenteeism 2. Presenteeism	A self-report measure that assesses the work- related consequences of illness including absenteeism, presenteeism, and workplace accidents.	4
Work Limitation Questionnaire (WLQ; Lerner et al., 2001)	1. Work-related time management 2. Physical demands 3. Interpersonal/mental Demands 4. Productivity demands	The WLQ evaluates the level of limitation the patient is experiencing in the workplace due to health problems. The patient reports his/her ability or inability to execute work tasks and related loss of productivity.	25 (there is also an 8-item version)
Work productivity and Activity Impairment (WPAI; Reilly et al., 1993)	1. Hours absent from work due to health issues 2. Hours absent for other reasons 3. Hours worked 4. Impact of health on productivity 5. Impact of health on productivity outside of work	Assesses the impact of health problems on work productivity	6

(continued)

Social Adjustment Scale (SAS-SR; Weissman & Bothwell, 1976)	1. Work 2. Social/leisure activities 3. Relationships with extended family 4. Roles as spouse, parent, and member of a family unit	Self-report which allows the routine assessment of the patient's social adjustment, especially in the case of depression. It is also a useful method as part of the detection of even mild depressions, regular aftercare evaluation of out-patients or as an outcome measure in longitudinal studies. Does not ask for specific time period (e.g., in the past 30 days...)	54
Health and Daily Living form (HDL; Moos, Cronkite, & Finney, 1983)	1. Health-related functioning 2. Social functioning and resources family functioning 3. Indices of life change	Structured assessment that gauges drinking problems and depressions. The measure also assesses availability of social supports, social functioning, and life stressors (chronic and acute).	
Life Stressors and Social Resources Inventory (LISRES; Moos & Moos, 1994)	1. Physical health 2. Spouse/partner 3. Finances 4. Work 5. Home/Neighborhood 6. Children 7. Friends & social activities 8. Extended family	A self-report measure that gauges ongoing life stressors and social resources as well as changes over time.	200
Disability Profile (DP; Schneier et al., 1994)	1. School 2. Work 3. Family 4. Marriage/dating 5. Friendships 6. Other interests 7. Activities of daily living 8. Suicidal Behavior	The DP is a clinician-rated instrument with items assessing current and most severe lifetime impairment due to social phobia in 8 domains.	8
Liebowitz Self-Rated Disability Scale (Schneier et al., 1994)	1. School 2. Work 3. Family 4. Marriage/dating 5. Friendships 6. Other interests 7. Activities of daily living 8. Suicidal behavior	Similar to DP, but self-report.	11
Social Functioning Questionnaire (Tyrer et al., 2005)	1. Work and home tasks 2. Financial concerns 3. Relationships/family 4. Sexual activities 5. Social contacts 6. Spare time activities	A short self-report measure adapted from the Social Functioning Schedule (SFS) to gauge the respondent's perception of his/her social functioning.	8
UCLA Social Attainment Scale (SAS; Goldstein, 1978)	Social Functioning	Assess level of social functioning. Used mostly in assessing functional impairment in psychotic populations.	7

(continued)

Table 21.1 Measures of functional impairment and quality of life (*continued*)

Measure	Domains Assessed	Description	Items
Quality of Life Inventory (QOLI; (Frisch et al., 1992)	1. Health 2. Self-esteem 3. Goals & values 4. Money 5. Work 6. Play 7. Learning 8. Creativity 9. Helping 10. Love 11. Friends 12. Children 13. Relatives 14. Home 15. Neighborhood 16. Community	A measure of general life satisfaction, it requires respondents to indicate the level of importance of each area on a 3-point scale, and their level of satisfaction with that area of their life. Brief descriptions/definitions are provided of each domain prior to each pair of items.	32
Inventory of Psychosocial Functioning (IPF; Marx et al., 2009)	1. Romantic relationships 2. Family relationships 3. Work 4. Friendships and socializing 5. Parenting 6. Education 7. Self-care	New self-report instrument designed to assess functional impairment across the spectrum of domains.	80 items on full scale; 7 items on brief scale
Quality of Well Being Scale (QWB; Kaplan et al., 1989)	1. Physical symptoms (36 items) 2. Psychological symptoms (14 items) 3. Self-care (2 items) 4. Mobility (3 items) 5. Physical activity (8 items) 6. Usual activity (3 items) 7. Overall self-rating of health (3 items) 8. Demographics (4 items)	An interviewer administered measure assessing problems in the past 3 days. Psychological symptoms assessed include symptoms of anxiety and depression. Also available in self-report form.	73
Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q; Endicott et al., 1993)	1. Physical health (13 items) 2. Subjective feelings (14 items) 3. Leisure time activities (6 items) 4. Social relationships (11 items) 5. General activities (14 items) 6. Work (13 items) 7. Household duties (10 items) 8. School/course work (10 items) 9. Medication (1 item) 10. Overall life satisfaction and contentment (1 item)	A self-report questionnaire intended to measure the level of enjoyment/satisfaction across several elements of daily functioning over the past week (5 days).	93
Life Functioning Questionnaire (LFQ; Altshuler, et al., 2002)	1. Duties at work/school 2. Duties at home 3. Leisure time with family 4. Leisure time with friends	A two-part assessment that examines "role function" over the past month. Part 1 focuses on all 4 domains, part 2 focuses on work only.	14 core items (part 1) 5 items (part 2)

The WHODAS-II is based on the *ICF* and assesses a wide range of impairment and disability dimensions using multi-item scales, including pain, concentration, understanding and communicating, mobility, self care, family burden, getting along with others, household and work activities and work loss, and participation in society. It is used across countries and population groups, has high test-retest reliability and correlates with other measures of functioning, such as the SF-36. The WHODAS-II is becoming widely used in investigations of functional disability across wide-ranging populations, including the physically ill (i.e., rheumatology, pulmonary, primary care cohorts) and severely mentally ill (schizophrenic cohorts).

The SF-36 is a relatively brief measure of health-related quality of life. It is a short form that assesses 8 areas selected from the 40 used in the Medical Outcomes Study (Stewart & Ware, 1992). Most items are measured on three-point scales (from "not limited at all" to "limited a lot"), five- or six-point scales (from "none of the time" to "all of the time"), and five-point scales (from "definitely true" to "definitely false"). The SF-36 provides eight domain scores indexing physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role, and mental health; in addition, summary physical and mental health scores may be computed. Also, the SF-36 offers norm-based scoring that may aid in interpretation of scores. It consistently has shown good reliability with internal consistency and test-retest reliabilities greater than .80 (McHorney et al., 1993). The validity of its subscales has been known to vary, with some subscales being more strongly associated with related variables than others, but overall it has displayed good content, concurrent, and predictive validity.

The Quality of Life Index (QOLI) is a measure of life satisfaction that was designed for use in treatment planning and outcome assessment. Items target 16 areas of life, (e.g., health, self-regard, work, friendships, romantic and family relationships) and are rated for both importance (three-point Likert scale from "not important" to "extremely important") and satisfaction (seven-point Likert scale from -3 "very dissatisfied" to +3 "very satisfied"). For each domain indicated to be important, responses on both questions are multiplied and domains indicated as not important are excluded. The QOLI has shown good convergent validity with other measures of subjective well-being. Furthermore, it has displayed excellent test-retest reliability (ranging from .80 to .91) and good internal consistency (alphas ranging from .77 to .91).

Specific Limitations of Current Measures Used to Assess PTSD-related Functioning and Quality of Life

Although there are many measures of functioning and quality of life from which to choose, each measure has its strengths and weaknesses that must be considered before selecting which to use. It is also important to keep in mind that, despite the fact that research has found repeated and strong associations between PTSD and functional impairment and quality of life difficulties, there are no universally accepted measures of functional impairment and quality of life for use with individuals with PTSD. It was noted earlier that one of the difficulties with assessment of functional impairment and reduced quality of life due to mental illness is the lack of reliability of self-report. Interview-based measures promote the use of clinical judgment in determining the degree to which specific symptoms may be related to difficulties in functioning and quality of life, as well as for determining whether an individual may be over or underreporting symptoms for secondary gain purposes. On the other hand, interview measures can be time and resource-intensive (e.g., Range of Impaired Functioning Tool, LIFE-RIFT; Leon et al., 1999). Minimally, they require the presence of an interviewer or observer, which may not be feasible under all circumstances and certainly limits the number of patients or research participants who can be assessed using this methodology. Even the briefest of measures, such as the GAF, requires some degree of clinical contact and thus may not be appropriate in all settings.

Another concern for researchers and clinicians is the burden associated with having patients and participants completing lengthy assessments. Lengthy measures (e.g., ICF checklist, LISRES; Moos, Fenn, & Billings, 1988) may not be practical or desirable in many healthcare settings or in large-scale survey studies when many measures are frequently administered. In these instances, researchers usually prefer brief measures of constructs, as longer measures may lead to inaccurate measurement resulting from lapses in attention or motivation.

On the other hand, questionnaires that are too brief pose their own problems. Problems with the single-item GAF have already been noted, but similarly, other questionnaires, while requiring little time to administer and score, may be too simple or

narrow in scope to capture the full range of impairments associated with PTSD and other disorders or to adequately assess all domains of impairment. For instance, the Sheehan Disability Scale (SDS; Sheehan, 1983) contains only three items that evaluate separate domains of functioning (Work/School, Social, and Family). Similarly, the Social and Occupational Functioning Assessment Scale (SOFAS; Goldman et al., 1992) is a single-item measure similar to the GAF, but is focused on social and occupational functioning and rates these together on a 0–100 scale, with anchor points.

Available short- to medium-length self-report questionnaires evaluate only a narrow range of functioning domains and thus provide an incomplete assessment of the entire spectrum of functioning. For instance, the Work Limitation Questionnaire (WLQ; Lerner et al., 2001) and the Work Productivity and Activity Impairment (WPAI; Reilly, Zbrozek, & Dukes, 1993) and the Health and Work Performance Questionnaire (HPQ; Kessler et al., 2003) are specific to difficulties in occupational functioning. Measures such as the Social Attainment Scale (SAS; Goldstein, 1978) and the Social Functioning Questionnaire (SFQ; Tyrer et al., 2005) similarly only address impairments in social functioning. Trauma survivors are known to exhibit deficits in many areas, and unless research or clinical questions are fairly narrow, many of these measures would not be appropriate to assess the broad spectrum of functioning deficits and quality-of-life difficulties that arise in the wake of trauma exposure.

Another difficulty with several of the measures of functioning pertains to the fact that many of the available scales focus on physical health-related impairment and health-related quality of life (HRQOL) and physical symptoms, (e.g., SF-36, WHODAS-II, Quality of Well-Being Scale (QWB); Anderson, Kaplan, Berry, & Bush, 1989). Although there is certainly a need for measures that evaluate deficits in functioning in relation to physical illness, the consequences of mental illness may be different from those arising from physical illness. For instance, items on the WHODAS-II assess difficulty in mobility or getting dressed. Such impairments are less likely the result of psychiatric symptoms and precious assessment time could perhaps be better spent.

Although there is certainly some overlap between symptoms and impairment, researchers have not paid sufficient attention to disentangling the two constructs for the purpose of measurement. As a result, some measures unfortunately confound impairment with symptomatology (e.g., QWB, SF-36, Health and Daily Living form). For instance, there are items on the SF-36 that inquire whether respondents "felt so down in the dumps that nothing could cheer you up" or whether they have "been very nervous" in the past four weeks.

Another issue that arises with respect to the assessment of functioning is the causal link between the PTSD symptoms and the experienced functional impairments and reduced quality of life. Much like the causal link that must be inferred between exposure to the stressor and PTSD symptoms, a similar link is presumed to exist between the symptoms and impairment. Researchers have chosen to address this problem in various ways. For instance, rather than asking the respondent to make the causal inference, some researchers may prefer to focus solely on impairment and assume that these limitations are due to the symptoms (e.g., LIFE-RIFT, QOLI, Social Adjustment Scale–Self Report; Weissman & Bothwell, 1976). Other researchers may require an explicit attribution of causality be made by the respondent. There are several measures of functioning that take this approach and instruct the individual completing the form to only endorse items if he or she attributes the impairment to the condition in question. For instance, on the Liebowitz Self-Rated Disability Scale (LSRDS; Schneier, Heckelman, Garfinkel, & Campeas, 1994), instructions to the questionnaire cue respondents with the following question: "How much does your emotional problem limit your ability to do each of the following?" In contrast, measures such as the SF-36 do not distinguish between different sources or causes of impairment. Some items contain phrasing such as "to what extent has your physical health or emotional problems interfered with. . . ."

Unfortunately, research has shown that asking respondents to make attributions regarding sources of impairment is not advised, since people make frequently make errors in attribution and engage in self-serving biases (e.g., Anderson, Krull, & Weiner, 1996; McNally, 2007). For instance, in the case of trauma exposure, attributions of the source of symptoms and functional impairment may be attempts at financial or other secondary gain (Resnick, West, & Payne, 2008). The difficulty lies in whether respondents themselves can accurately differentiate the source of their impairments, which

not only has not been established empirically but also it is unclear whether such information is even objectively knowable. In reality, there could be any number of causes for the functional impairments associated with trauma exposure, as trauma exposure can be associated with numerous physical and psychological sequelae. In fact, if it *is* possible to gauge, it is likely that some trauma survivors are more able than others to accurately identify such differences, which would introduce even more measurement error.

Although much of the psychopathology research literature focuses on individual syndromes, clinically speaking, comorbidity is the norm. Although PTSD is emblematic of the psychological aftermath of trauma exposure, PTSD is only one of the disorders known to develop in the aftermath of an extreme stressor. Adjustment disorders, mood disorders, substance use disorders, and other anxiety disorders are some of the symptom profiles that are known to arise in response to trauma. According to the National Comorbidity Survey (Kessler, Sonnega, Bromet, & Hughes, 1995), the most commonly associated comorbidities are depression (48%) and substance abuse (40%), both of which are also know to be associated with impairments in functioning (McKnight & Kashdan, 2009) and quality of life (Hansson, 2002; Rapaport et al., 2005; Rudolf & Watts, 2002). In fact, some studies have shown that psychological comorbidity may be associated with lower quality of life (Forman-Hoffman et al., 2005; Norberg, Diefenbach, & Tolin, 2008; Rudolf & Watts, 2002; Zayfert, Dums, Ferguson, & Hegel, 2002) and specifically, some researchers have observed more functional impairment in the presence of comorbid PTSD and depression (Momartin, Silove, Manicavasagar, & Steel, 2004) as well as comorbid PTSD and substance abuse disorders (Mills, Teesson, Ross, & Peters, 2006; Najavits, Weiss, & Shaw, 1999; Ouimette, Goodwin, & Brown, 2006). Given that these disorders co-occur at such high rates, this poses an additional problem for the assessment of functional impairment in the context of PTSD—namely, that it is impossible to tell whether the impairments are due to one disorder or another, or to the combination of disorders. Of course, it is possible that the other disorders are also sequelae to trauma and thus all of the impairment may be distally attributable to the trauma exposure, if not the PTSD per se. Nonetheless, at least in some cases the comorbid disorders may have a separate etiology, and questions remain about how best to understand or partition the causes of functional impairment.

This state of affairs suggests that the development of a new measure of psychiatric-related functional impairment for use with trauma-exposed individuals is warranted. Importantly, any new measure should assess all the pertinent domains of functioning with sufficient breadth and depth without requiring respondents to make attributions regarding the cause of the impairments.

The Inventory of Psychosocial Functioning (IPF; Marx et al., 2009) is a newly developed 80-item self-report measure designed to assess functional impairment across multiple domains. Unlike the other instruments described here, the IPF is easy to use and score, is not disorder specific but has relevant content for impairment associated with PTSD and other psychiatric disorders, distinguishes between symptoms and impairment, does not require attributions regarding the cause of the impairments, and is usable in both research and clinical contexts.

The IPF asks respondents to rate their functioning over the past 30 days. Items are rated on a seven-point scale ranging from 1 ("never") to 7 ("always"). The IPF yields a mean score for each of seven scales: romantic relationships with a spouse or partner, family relationships, work, friendships and socializing, parenting, education, and self-care. A mean functional impairment score is computed by calculating the mean of the scores for each completed scale (IPF grand mean). Because functioning over the past 30 days is assessed, respondents skip sections of the instrument that do not apply to them.

Currently, the psychometric properties of the IPF are being tested with male and female Veterans. Thus far, based on data collected from 285 participants, the IPF is demonstrating excellent psychometric properties. The IPF scales demonstrate strong internal consistency, with Cronbach alphas ranging from .79 to .90. The IPF scales and IPF grand mean score all correlate significantly with a number of other self-report measures of impairment and quality of life, such as the SDS, WHODAS-II, SF-36V (Kazis et al., 1999), QOLI, and the GAF.

The IPF grand mean score and scale scores all correlate significantly with PTSD symptom severity, as assessed using the Clinician Administered PTSD Scale for *DSM-IV* (CAPS; Blake et al.,

1990), such that greater functional impairment is associated with more severe PTSD symptoms. The IPF grand mean also correlates significantly with major depression symptom severity, assessed using the module for Major Depressive Episode (current) from the M.I.N.I. International Neuropsychiatric Interview (Sheehan et al., 1998), such that greater functional impairment is associated with more depression symptoms. In terms of discriminant validity, the IPF grand mean score correlates less strongly with the total score from the Psychopathic Personality Inventory-Short Form and its subscales (PPI-SF; Lilienfeld & Andrews, 1996; Marx et al., 2009).

These preliminary findings suggest that the IPF is already a viable option for clinicians and researchers who need to assess psychiatric-related functional impairment. However, continued research is needed to refine the instrument and determine the extent to which it will be helpful to both clinicians and researchers in the future.

Conclusions

In sum, it is clear that trauma can lead to PTSD, which may be associated with impairments in functioning and quality of life. Evidence from numerous sources indicates that the impact of trauma exposure and subsequent PTSD frequently includes difficulties in various areas. The present *DSM* diagnostic system includes functional impairment as one criterion for the assignment of a diagnosis. Particular forms of impairments may not be specific to PTSD, but are perhaps attributable to mental health difficulties more generally. In addition, these impairments may be transitory or longstanding, and as yet, it is unclear which factors may influence their severity or course.

Functional impairment and decreases in quality of life are important outcomes of interest following exposure to potentially traumatic events and are in need of further study. The level of impairment, severity, and course of impairment over time is not understood and may reveal interesting aspects of trauma and recovery that have yet to be observed or elucidated. To date this has not been adequately assessed among traumatized populations due, in part, to an absence of appropriate measurement instruments.

No measure to date has proven adequate to the assessment of functional impairments. Problems with existing measures include length (either too long or too brief), requiring an independent clinical interviewer or rater, focus on too few aspects of impairment, or requiring respondents to make causal attributions. Efforts are under way in the creation of a new measure of functional impairment that avoids some of the pitfalls that have made the assessment of mental health related functional impairment so difficult to date.

Future Directions

In order for research to proceed in this area, it will first be important to arrive at a consensus regarding the definitions of terms. Especially given the fact that functional impairment will likely continue to be a key element of psychological diagnosis, it behooves the field to provide an adequate definition as a starting point. Once key terms are defined, it will be important to validate measures of functional impairment that assess mental-health specific constructs in trauma-exposed populations. Of particular utility to the field would be a general consensus on a small number of measures that are more or less widely accepted so that comparisons can be made across studies. Of course, specific research questions may necessitate the use of focused measures, but as can be seen in other areas of research, there is utility in standardizing measures to a point.

Regardless of whether the field agrees on standardized measurement, an important next step in research in this area will be to continue to establish whether there are domain-specific challenges among those with PTSD by comparing the disability profiles of those with PTSD to those with other disorders. The relationship between symptoms of PTSD and functional impairment is arguably the most important endeavor in this area.

It will also be important to identify potential mediators and moderators of the impairments in particular domains, as these may then reasonably become targets for psychotherapeutic interventions. Indeed, we must also evaluate whether current interventions adequately improve functioning; and if so, whether they affect global functioning, or whether they differentially ameliorate functioning in specific domains. Similiarly, it will also be important to determine whether specific components of those therapies influence global functioning and specific areas of impairment. The program of research proposed here is certainly ambitious and will require the contributions of many individuals. Nonetheless, it is

only through the elucidation of the complex relationships among trauma, psychopathology, and quality of life that we will be in a position to help survivors of trauma on the path to recovery and reclaiming their lives.

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