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ABSTRACT

Navy corpsmen play an essential role in providing health care to both the Navy and the Marine Corps, yet little is known about the factors associated with resilience and readiness in this population. The objective of this study was to identify demographic and psychosocial predictors of dispositional resilience and perceived readiness in corpsmen. The sample consisted of 1,602 male Navy corpsmen attending Field Medical Training Battalion–West, Camp Pendleton, California. Hierarchical multiple regression was used to determine the associations of demographic and psychosocial predictors with both dispositional resilience and perceived readiness. In the final model, four psychosocial factors were significant predictors of both resilience and readiness: occupational self-efficacy, task-specific self-efficacy, motivation to be a corpsman, and lower anger. Two additional factors were significant predictors of resilience but not of readiness: higher organizational commitment and lower levels of sleep problems. These results are consistent with past research that has linked self-efficacy to a broad range of positive outcomes. Overall, the results demonstrate the importance of self-efficacy for corpsmen's resilience and readiness, and suggest that training and interventions aimed at increasing corpsmen's self-efficacy have the potential to improve resilience and readiness in this population.

INTRODUCTION

Navy corpsmen play a critical role in the U.S. Navy and Marine Corps, serving as enlisted medical specialists for both branches. In operational settings, including combat, corpsmen are often the sole or primary medical provider for the sailors and Marines with whom they serve. In these settings, corpsmen often face enormous challenges because they are tasked with providing quality care to other service members, typically under harsh, chaotic, and nonsterile conditions. Corpsmen are unique in that they experience a double burden of stress: the potentially life-threatening traumas of war, coupled with the responsibility of providing care to ill and injured service members.

In light of the stressful duties and high rates of combat exposure faced by military medical personnel in recent conflicts,[1,2] it is not surprising that military medical personnel appear to be at an elevated risk for developing mental health problems,[3–5] which might also impact their readiness. The readiness of Navy corpsmen during deployment, in turn, could greatly affect the safety and well-being of the service members with whom they serve.

Research has shown that resilience is protective for mental health problems in military populations[6,7] and among civilians.[8,9] As such, it is important that factors associated with resilience in corpsmen be understood so that their resilience can be strengthened. However, we are not aware of any research examining the correlates of resilience among corpsmen. Thus, one objective of this study was to determine the psychosocial factors associated with dispositional resilience in corpsmen. As for readiness, there has been little empirical research on readiness in corpsmen, although it has been studied in soldiers.[10–12] A second objective of this present study was to identify psychosocial factors associated with perceived readiness in corpsmen.

To address these objectives, we examined a variety of factors that may be associated with resilience and/or readiness: occupational self-efficacy, task-specific self-efficacy, organizational commitment, motivation to be a corpsman, social support, anger, and sleep problems.

Self-efficacy is defined as a personal judgment of "how well one can execute courses of action required to deal with prospective situations."[13] It is theorized that self-efficacy affects the activities individuals choose to pursue, the effort they expend, and the degree of persistence they show in the face of failure or obstacles.[13,14] Bandura clearly differentiated between general and specific self-efficacy.[15] In contrast to general self-efficacy, which is the individual's general sense of mastery and control, specific self-efficacy beliefs are performance-related appraisals of an individual within a particular situation, such as how well one believes he or she can perform at a specific job. Bandura suggested that behavior would be better predicted by self-efficacy assessed at a more specific level (such as academic) rather than at a more general level.

Research has demonstrated that both general and specific types of self-efficacy are associated with a wide range of positive behaviors and outcomes.[16–18] In this study, we focused on occupational self-efficacy and task-specific self-efficacy, as they relate to tasks that corpsmen are expected to perform. Based on research and theory, it seemed reasonable to expect that both occupational and task-specific self-efficacy would be associated with resilience and perceived readiness among corpsmen.[13,14,18,19]

Another factor examined in this study was organizational commitment, which refers to an individual's psychological attachment to the organization. Organizational commitment is predictive of reenlistment, job satisfaction, morale, and adjustment to the military,[20,21] and it has been found to be protective for the development of mental health problems among military members.[22] It seemed reasonable to expect that organizational commitment would be positively associated with both resilience and perceived readiness. Similarly, although we were not able to find any directly relevant studies on motivation to be a corpsman in the literature, it seemed logical to expect that motivation to be a corpsman would be positively associated with resilience and perceived readiness.

In this study, we also investigated social support, anger, and sleep problems in relation to resilience and readiness. Each of these factors has been linked with mental health problems. More specifically, individuals with high levels of social support are less likely to experience mental health problems,[23] whereas those with anger issues[24–26] or sleep problems[27,28] are more likely to suffer from mental health problems. Based on this evidence, we hypothesized that social support, anger, and sleep problems would be associated with both resilience and readiness in corpsmen.

In sum, the objective of this study was to identify demographic and psychosocial factors associated with dispositional resilience and perceived readiness in a sample of Navy corpsmen.

METHODS

Subjects

The sample consisted of 1,602 active duty Navy Hospital Corpsmen (HM) at the Field Medical Training Battalion (FMTB)−West School, at Camp Pendleton, California. Participants had not yet completed the training required to earn the specific occupational designation of HM-8404, Field Medical Service Technician, also known as a Fleet Marine Force corpsman. Fleet Marine Force corpsmen are unique in that they are allowed to serve with Marines in the field, in combat settings, and other operational deployments. However, they can also be assigned to various other Navy and Marine Corps duty stations.

Because FMTB–West only trains male corpsmen, all study participants were male. Because corpsman is an enlisted occupation, there were no officers in the study. Age of study participants ranged from 18 to 45 (mean = 22.5 years, standard deviation = 3.8 years), and tenure in the Navy ranged from 6 months to 17 years (mean = 1.5 years, standard deviation = 2.1 years). Paygrades ranged from E-1 to E-7; approximately two-thirds of participants were in paygrade E-2 (20.2%) or E-3 (46.7%). Corpsmen participants were predominantly white/Caucasian (49%), with smaller proportions of Asian (12%), black (10%), Hispanic (5%), and other race groups. Nearly a quarter of participants (24%) self-reported their race/ethnicity as "mixed or multiple races."

Procedures

The data presented in this paper were collected as part of a larger study.[29] The goal of the larger study was to assess the effectiveness of "highly realistic training," a medical simulation training that corpsmen participated in while attending FMTB–West. The purpose of the training was to better prepare corpsmen to provide medical care in combat zones and other operational settings.

As part of this larger project, corpsmen participants were asked to complete pretest and posttest surveys in large classroom settings at the FMTB–West School. All data for the present study came from the pretest surveys, which were administered about 6 weeks before the training began. Participation in the study was voluntary, and signed consent was provided by all participants. Participants' names were requested, but confidentiality was assured. All corpsmen students received the training as part of the FMTB–West course, regardless of whether they participated in the surveys. All study procedures were approved by the Naval Health Research Center's institutional review board.

Measures

The survey assessed two outcomes: dispositional resilience and perceived readiness. In addition, the survey assessed seven psychosocial predictors: organizational commitment, motivation to be a corpsman, occupational self-efficacy, task-specific self-efficacy, anger, sleep problems, and social support. Demographic variables were also assessed.

Resilience. The 10-item version of the Connor-Davidson Resilience Scale (CD-RISC)[30] was used to assess dispositional resilience. This widely used measure is a shortened version of the 25-item Connor-Davidson Resilience Scale.[31] Like the full CD-RISC, the 10-item CD-RISC assesses an individual's ability to adapt and thrive despite stress and adversity. A resilience score was created by summing across all scale items ($\alpha = 0.87$).

Readiness. Perceived readiness was measured using a 5-item scale that was developed specifically for this study. Sample items include: "Rate the degree to which you feel prepared to combat deploy with a Marine Corps unit" and "Rate the degree to which you feel prepared to not choke or make mistakes." A perceived readiness score was created by summing across all scale items ($\alpha = 0.92$).

Organizational commitment. Organizational commitment was measured using a 4-item scale developed by Gade and colleagues for use in military samples.[21] We deliberately chose to measure "affective commitment," which refers to employees' emotional attachment to the organization. Although there are other types of organizational commitment (e.g., normative commitment), research has generally found that affective commitment has the strongest associations with important organizational outcomes.[32] Sample items include: "I feel like 'part of the family' in the military" and "I feel emotionally attached to the military." An organizational commitment score was created by summing across all scale items ($\alpha = 0.88$.)

Motivation to be a corpsman. This 3-item scale was developed specifically for this study. This scale assesses the participants' motivation to work as 8404 corpsmen. A sample item is: "Rate how motivated you are to work as an 8404 corpsman, serving with Marines." A motivation to be a corpsman score was created by summing across all scale items ($\alpha = 0.95$).

Occupational self-efficacy. Occupational self-efficacy is an individual's sense of confidence that he or she can execute the skills and duties required by his or her occupation. A 9-item scale assessing corpsmen's occupational self-efficacy was developed specifically for this study. This scale measures the participant's overall confidence that he can perform competently as a corpsman. Sample items include: "I am confident that I will be able to provide quality medical care under pressure" and "I am confident that I will be able to work well in a team environment." An occupational self-efficacy score was computed by summing across all items ($\alpha = 0.94$).

Task-specific self-efficacy. Task-specific self-efficacy is an individual's sense of confidence that he or she can execute specific tasks related to his or her occupation. A 9-item scale assessing task-specific self-efficacy was developed specifically for this study. Scale items ask participants to rate how confident they are in performing specific medical skills that are considered core competencies for 8404 corpsmen. Sample items include: "Rate how sure you are that you could manage hemorrhage control" and "Rate how sure you are that you could perform airway management." A task-specific self-efficacy score was created by summing across all items ($\alpha = 0.90$).

Anger. The Brief Anger-Aggression Questionnaire[33] was used to measure anger (6 items). Sample items include: "I get mad enough to hit, throw, or kick things" and "I easily lose my patience with people." An anger score was created by summing across all scale items ($\alpha = 0.78$).

Sleep problems. A 3-item scale assessing sleep problems was adapted from the Insomnia Severity Index,[34] a validated measure of insomnia and sleep quality. A sample item is: "How satisfied/dissatisfied are you with your current sleep pattern?" A sleep problems score was created by summing across all items ($\alpha = 0.72$).

Social support. Social support was assessed by a single item: "How many close friends or relatives do you have that you can call on for help or talk to about personal problems?" It was presented with a 5-point response scale ranging from 1 (*none*) to 5 (*five or more*). This item was adapted from a single item measure of social support used by Sherbourne and Stewart.[35]

Demographics. The pretest survey asked for information on participants' age, tenure in the Navy, race/ethnicity, education, and paygrade.

Data Analysis

Statistical analyses were performed using SPSS Statistics for Windows, version 23 (IBM, Armonk, NY). Pearson correlations were computed to determine the strengths of association between each pair of study variables. Hierarchical multiple regression analysis was used to determine the strongest predictors of corpsmen's resilience and perceived readiness, while controlling for the effects of other important predictors. For each outcome, education and age were entered in the first step of the analysis; on the second step, the psychosocial variables that were significant predictors of the focal outcome in the bivariate analysis ($p < 0.05$) were entered.

RESULTS

Pearson correlations between the key study variables are shown in Table 1. The two outcomes, resilience and perceived readiness, were moderately associated ($r = 0.34$, $p < 0.01$). Although the intercorrelations between the predictors revealed a number of significant associations, none of these surpassed an acceptable level of multicollinearity for predictors in multiple regression analyses. The strongest zero-order predictors of resilience were occupational self-efficacy, motivation to be a corpsman, and organizational commitment. The strongest zero-order correlates of readiness were task-specific self-efficacy, occupational self-efficacy, and motivation to be a corpsman.

In the hierarchical multiple regression to predict resilience, all but one of the predictors that were significant at the bivariate level remained significant; the exception was social support (Table 2). As in the bivariate analyses, the strongest predictors were occupational self-efficacy and motivation to be a corpsman. Higher levels of occupational self-efficacy, task-specific self-efficacy, motivation to be a corpsman, and organizational commitment were associated with greater corpsmen resilience. In contrast, lower levels of anger and sleep problems were predictive of resilience. In the final regression model, 34% of the variance in resilience was accounted for by the demographic and psychosocial variables.

For perceived readiness, two variables that were significant bivariate predictors were no longer significant in the final model: social support and organizational commitment. The strongest predictor by far was task-specific self-efficacy (Table 3). Higher levels of task-specific self-efficacy, occupational self-efficacy, and motivation to be a corpsman were all predictive of higher perceived readiness, whereas higher levels of anger were associated with lower perceived readiness. In the final regression model, 40% of the variance in readiness was accounted for by the psychosocial variables.

DISCUSSION

This study sought to identify factors associated with dispositional resilience and perceived readiness among Navy corpsmen. In our sample of 1,602 corpsmen, six psychosocial factors emerged as significant in relation to resilience in the final model: occupational self-efficacy, task-specific self-efficacy, motivation to be a corpsman, organizational commitment,

lower anger, and fewer sleep problems. Of these six factors, occupational self-efficacy was the strongest predictor of resilience. For perceived readiness, four psychosocial factors were significant in the final model: task-specific self-efficacy, occupational self-efficacy, motivation to be a corpsmen, and lower levels of anger. Task-specific self-efficacy was the strongest predictor of perceived readiness.

Resilience

Of all the factors examined, occupational self-efficacy had the strongest association with dispositional resilience. Moreover, task-specific self-efficacy was also positively related to resilience. Although we are not aware of any other studies demonstrating an association between job-related self-efficacy and resilience, these associations are not surprising. In general, past research has linked both general and specific types of self-efficacy with a broad range of positive outcomes, including better health habits,[36] better mental health,[19,37] and positive work-related outcomes.[16–18] Given that self-efficacy involves feelings of mastery and control, it makes sense that individuals who feel a greater sense of control regarding core aspects of their occupation would exhibit a high level of dispositional resilience.

Another important finding was that motivation to be a corpsman was positively related to dispositional resilience. While previous studies have not examined this specific association, this finding seems logical. It is not surprising that individuals who are strongly motivated to pursue this challenging occupation, which can involve providing medical care in combat zones, would have greater resilience.

As hypothesized, a positive association was found between organizational commitment and resilience. Conceptually, this makes sense and this finding is consistent with research demonstrating that organizational commitment is related to an array of positive work-related outcomes, including reenlistment, job satisfaction, morale, better mental health among military members, and lower perceived stress.[20–22,32] Given the lack of research examining organizational commitment in relation to resilience, this finding contributes to the literature by suggesting the potential impact of organizational commitment on resilience. However, longitudinal research is needed to determine the directionality of this association.

One unexpected finding was that social support was not associated with resilience after the effects of other predictors had been controlled. While resilience and social support had a modest but significant association at the bivariate level, this was not the case at the multivariate level. The fact that social support was not related to resilience in the final model may have been due to our use of a single item to assess social support. Use of a more comprehensive measure of social support might have produced a more robust association between social support and resilience. It is also possible that other social constructs such as unit cohesion and leadership are more important than social support for resilience in this military population.

Readiness

Task-specific self-efficacy was by far the strongest predictor of perceived readiness. Based on past research and theory, it is not surprising that task-specific self-efficacy was

associated with perceived readiness among corpsmen, although we were unable to identify any other studies that examined the relationship between these factors.[14,15] This finding suggests that corpsmen who feel confident about their ability to perform specific lifesaving procedures, such as hemorrhagic control or emergency cricothyroidotomy, also perceive themselves as well-prepared for combat and other operational deployments. Similarly, we found that occupational self-efficacy was associated with perceived readiness in our final model. It seems logical that individuals who are confident in executing the overall skills and responsibilities required by the corpsman billet would also feel a strong sense of perceived readiness.

As hypothesized, motivation to be a corpsman was positively related to perceived readiness. Although we are not aware of any research examining motivation to be a corpsman in relation to readiness, this finding is not surprising. It makes sense that individuals who feel a strong level of motivation to become corpsmen would also view themselves as well-prepared for combat and other operational deployments. Research is needed to determine the underlying reasons for this association.

Our study's finding that anger was negatively related to perceived readiness is consistent with research demonstrating negative associations between anger and mental health problems.[25,26] Additional research on the relationship between resilience and anger would be useful. Contrary to expectation, social support was not related to perceived readiness in the final model. As noted with regard to resilience, this lack of a robust association may have been due to our use of a single item to assess social support.

Comparison of Results for Resilience and Readiness

Although our study outcomes, resilience and readiness, were only moderately correlated, the two outcomes had similar predictors. In both correlational and multiple regression analyses, we found that both outcomes were positively linked with occupational self-efficacy, task-specific self-efficacy, and motivation to be a corpsman, and both were negatively linked with anger. One notable difference between outcomes was that sleep problems were negatively related to resilience but unrelated to readiness. The association of sleep problems with resilience is not surprising, because individuals with sleep difficulties are more likely to have mental health problems, which are linked with lower resilience. There is less reason to expect an association between sleep problems and readiness given the dearth of research in this area. At the bivariate level, organizational commitment was related to both resilience and readiness. However, after controlling for other predictors, it remained significant only for resilience. Finally, although social support was a weak but significant predictor of both resilience and readiness in the bivariate correlations, it was not a significant predictor of either outcome after controlling for other salient predictors. In sum, the only notable differences in our findings for our two outcomes in the final models were that organizational commitment and sleep problems were associated with resilience but unrelated to readiness.

Strengths and Limitations

This study has several limitations. Because our study was cross-sectional, we were not able to determine direction of causality between the psychosocial factors that we treated as

predictors and those that we treated as outcomes. Another limitation was our reliance on self-report data, with all of its associated problems (e.g., social desirability bias). Also, the surveys used in this study were identified. Although confidentiality was assured, some degree of underreporting of negative thoughts and behaviors may have occurred. Lastly, because all participants were male, our findings cannot be generalized to female corpsmen. Despite these limitations, this study provided unique findings regarding the important role that specific types of self-efficacy (e.g., occupational self-efficacy) may play in resilience and perceived readiness. To our knowledge, this is the first study to examine a variety of psychosocial factors in relation to dispositional resilience and perceived readiness in a large sample of corpsmen.

Conclusions

Of all the variables studied, the factor that was most strongly associated with resilience was occupational self-efficacy, and the factor that was most strongly associated with perceived readiness was task-specific self-efficacy. Overall, these results demonstrate the importance of self-efficacy for corpsmen resilience and readiness. Although these results are correlational, they suggest the possibility that interventions that bolster corpsmen's self-efficacy may also increase their resilience and readiness. In general, research and theory suggest that self-efficacy is potentially modifiable.[13,38] Moreover, results from the larger study of which this effort was a part showed significant increases in corpsmen's occupational and task-specific self-efficacy as well as in their perceived readiness as a result of participating in highly realistic medical simulation training.[29,39] Taken together, these findings suggest that training and other interventions aimed at increasing corpsmen's self-efficacy have the potential to improve resilience and readiness in this understudied population.

Additional research is needed to determine the best specific methods for strengthening self-efficacy among military medical providers. Further research also will be needed to replicate and extend our understanding of the range of factors that contribute to dispositional resilience and perceived readiness among corpsmen and other military medical personnel. In this regard, it would be particularly helpful to conduct multiwave longitudinal research examining whether changes in resilience and readiness over time are linked to specific interventions or to prior changes in specific psychosocial risk and protective factors (e.g., job-related self-efficacy and organizational commitment). Given the pivotal role that corpsmen play in protecting the health of other sailors and Marines, continued research into the determinants of their own health and performance is clearly warranted.

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Table 1. Pearson Correlations Between Study Variables

	1	2	3	4	5	6	7	8	9	10	11
1. Resilience	_										
2. Readiness	0.34**	_									
3.Organizational commitment	0.32**	0.22**	_								
4. Motivation to be a corpsman	0.37**	0.35**	0.46**	_							
5. Occupational self-efficacy	0.47**	0.47**	0.28**	0.35**	_						
6. Task-specific self-efficacy	0.25**	0.53**	0.14**	0.12**	0.46**	_					
7. Anger	−0.29**	−0.11**	−0.22**	−0.16**	−0.14**	−0.01	_				
8. Sleep problems	−0.19**	−0.04	−0.17**	−0.14**	−0.09**	0.02	0.24**	_			
9. Social support	0.15**	0.06*	0.18**	0.06*	0.12**	0.07**	−0.14**	−0.14**	_		
10. Education	0.10**	0.01	−0.02	−0.08**	0.07*	0.07**	−0.08**	−0.01	0.03	_	
11. Age	0.05*	0.01	−0.02	−0.14**	0.04	0.07**	−0.14**	0.05*	0.00	0.48**	_

*$p < 0.05$. **$p < 0.01$.

Table 2. Final Model: Results of Hierarchical Multiple Regression Predicting Resilience

Variable	B	SE B	β	*t*	ΔR^2
Step 1					0.01
Age	0.05	0.04	0.03	1.21	
Education	0.33	0.20	0.04	1.62	
Step 2					0.34***
Occupational self-efficacy	0.23	0.02	0.31	11.78***	
Task-specific self-efficacy	0.05	0.02	0.07	2.78**	
Motivation to be a corpsman	0.33	0.05	0.19	7.03***	
Social support	0.13	0.12	0.03	1.08	
Organizational commitment	0.15	0.04	0.10	3.99***	
Anger	−0.21	0.03	−0.15	−6.26***	
Sleep problems	−0.19	0.05	−0.08	−3.57***	

[a]For final model, adjusted $R^2 = 0.34$.

*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

Table 3. Final Model: Results of Hierarchical Multiple Regression Predicting Perceived Readiness

Variable	B	SE B	β	*t*	ΔR^2
Step 1					0.00
Age	0.01	0.04	0.00	0.19	
Education	−0.28	0.20	−0.03	−1.40	
Step 2					0.40***
Occupational self-efficacy	0.15	0.02	0.20	7.79***	
Task-specific self-efficacy	0.29	0.02	0.42	17.51***	
Motivation to be a corpsman	0.43	0.05	0.23	9.11***	
Social support	0.02	0.12	0.00	0.16	
Organizational commitment	−0.02	0.04	−0.01	−0.55	
Anger	−0.07	0.03	−0.05	−2.00*	

[a]For final model, adjusted $R^2 = 0.40$.

*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

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14. ABSTRACT

Navy corpsmen play an essential role in providing health care to both the Navy and the Marine Corps, yet little is known about the factors associated with resilience and readiness in this population. The objective of this study was to identify demographic and psychosocial predictors of dispositional resilience and perceived readiness in corpsmen. The sample consisted of 1,602 male Navy corpsmen attending Field Medical Training Battalion–West, Camp Pendleton, California. Hierarchical multiple regression was used to determine the associations of demographic and psychosocial predictors with both dispositional resilience and perceived readiness. In the final model, four psychosocial factors were significant predictors of both resilience and readiness: occupational self-efficacy, task-specific self-efficacy, motivation to be a corpsman, and lower anger. Two additional factors were significant predictors of resilience but not of readiness: higher organizational commitment and lower levels of sleep problems. These results are consistent with past research that has linked self-efficacy to a broad range of positive outcomes. Overall, the results demonstrate the importance of self-efficacy for corpsmen's resilience and readiness, and suggest that training and interventions aimed at increasing corpsmen's self-efficacy have the potential to improve resilience and readiness in this population.

15. SUBJECT TERMS

resilience, readiness, corpsmen, medics, self-efficacy

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