Development and Initial Testing of a Measure of Public and Self-Stigma in the Military

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Objective: This research developed and tested the Military Stigma Scale (MSS), a 26-item scale, designed to measure public and self-stigma, two theorized core components of mental health stigma. **Method:** The sample comprised 1,038 active duty soldiers recruited from a large Army installation. Soldiers' mean age was 26.7 (standard deviation = 5.9) years, and 93.6% were male. The sample was randomly split into a scale development group ($n = 520$) and a confirmatory group ($n = 518$). **Results:** Factor analysis conducted with the scale development group resulted in the adoption of two factors, named public and self-stigma, accounting for 52.1% of the variance. Confirmatory factor analysis conducted with the confirmatory group indicated good fit for the two-factor model. Both factors were components of a higher order stigma factor. The public and self-stigma scales for the exploratory and confirmatory groups demonstrated good internal consistency ($\alpha = .94$ and .89; $\alpha = .95$ and .87, respectively). Demographic differences in stigma were consistent with theory and previous empirical research: Soldiers who had seen a mental health provider scored lower in self-stigma than those who had not. **Conclusions:** The MSS comprises two internally consistent dimensions that appear to capture the constructs of public and self-stigma. The overall results indicate that public and self-stigma are dimensions of stigma that are relevant to active duty soldiers and suggest the need to assess these dimensions in future military stigma research. J. Clin. Psychol. 68:1036–1047, 2012.

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Population-based research indicates that mental health problems such as depression and post-traumatic stress disorder may be present in 19% to 26% of U.S. service members returning from deployments to Iraq and Afghanistan (Hoge et al., 2004; Hoge, Auchterlonie, & Milliken, 2006). In addition, suicide among U.S. service members has steadily risen and has reached an all-time high (Kuehn, 2010). The increase in military suicide and significant rates of mental health problems reported for U.S. service members highlights the importance of access to mental health services. Stigma associated with receiving mental health care, however, may discourage service members from seeking needed services (Greene-Shortridge, Britt, & Castro, 2007). For example, service members appear much more likely to follow-up on referrals to medical treatment as compared with referrals for mental health treatment (Britt, 2000). Hoge et al. (2004) found that only 23% to 40% of service members diagnosed with psychiatric disorders sought treatment in the last year. Moreover, strong evidence indicates that despite the availability of evidence-based treatments for many mental health disorders, stigma significantly impedes care-seeking behavior (Corrigan, 2004).

The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or reflecting the views of the Department of Army or the Department of Defense.

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Untreated mental health problems in the military are associated with significant costs such as decreased retention, delayed treatment, reduced organizational efficiency, and family disruption (Westphal, 2007). Stigma further intensifies these problems by eroding self-esteem, engendering a sense of isolation, and negatively influencing overall well-being (Ritsher, Otilingam, & Grajales, 2003). Furthermore, certain aspects of the military culture may differentiate military versus civilian mental health stigma. For example, warrior ethos emphasizes discipline, mental toughness, self-sufficiency, and an abiding dedication to successful mission execution. Such values are necessary and laudable but might also inhibit use of mental health services.

There are relatively few validated measures of mental health stigma, and the overwhelming majority of existing measures of mental health stigma were developed and tested in civilian populations. Military mental health stigma may differ from mental health stigma within the civilian realm by virtue of the significant differences between civilian and military mental health care systems and cultures such as warrior ethos. Existing measures of mental health stigma have been designed to tap dimensions that reflect civilian-based concepts that do not address aspects of stigma that may uniquely exist in the U.S. military. For example, existing measures have been developed to assess stigma in association with severe mental illness (e.g., Perlick et al., 2007) and alcohol dependence (Schomerus et al., 2011), to predict private mental service utilization among university students (Mackenzie, Knox, Gekoski, & Macaulay, 2004; Komiya, Good, & Sherrod, 2000), and to examine other aspects of mental health stigma relevant to nonmilitary populations (Link, Yang, Phelan, & Collins, 2004). Moreover, existing stigma measures were developed and used in groups of individuals possessing characteristics that contrast with characteristics typical of active duty service members (e.g., individuals with high levels of psychopathology, more highly educated than the average service member, significantly less subject to externally imposed constraints on behavior with potentially less to lose, and more to gain in seeking mental health services).

To advance our understanding of mental health stigma among U.S. service members and to assess the extent to which such stigma might negatively influence decisions to seek mental health services, a reliable and valid measure of mental health stigma specific to the U.S. military is clearly indicated. Such a measure is necessary to provide information about the prevalence of mental health stigma among service members and to evaluate programs and efforts designed to reduce such stigma and to increase service members' access to care. A psychometrically valid measure of military mental health stigma may also facilitate a deeper understanding of such stigma toward the goal of identifying factors that contribute to stigmatization as well as targets for prevention and intervention.

Mental health stigma is defined here as, "social-cognitive processes [that] motivate people to avoid the label of mental illness that results when people are associated with mental health care" (Corrigan, 2004, p. 614). Such stigma is the most commonly cited reason for not seeking mental health services and is theorized to comprise two aspects: (a) public stigma (perceptions of external stereotypes and prejudices) and (b) self-stigma (internalized feelings of incompetence; Corrigan, 2004). Greene-Shortridge et al. (2007) put forth a theoretical model of military mental health stigma that incorporates Corrigan's (2004) distinction between public stigma and self-stigma. Public stigma is defined as the reaction of the general public toward individuals with mental health problems, whereas self-stigma is the internalization of the manner in which individuals with mental health problems are portrayed in the general population. For example, within the military it is possible that some service members desire to access mental health services to address emotional distress but are deterred because they are concerned about how seeking such services might lead to being negatively labeled or rejected/avoided by important others (i.e., public stigma). Research indicates that families often report experiencing shame in response to a family member's mental health issues (Corrigan & Miller, 2004). Thus, service members may be open to seeking mental health services but fail to do so due to concerns associated with public stigma. Likewise, service members may internalize societal or military cultural labels, implicit to the concept of public stigma and may therefore consider it a personal weakness to seek mental health services for emotional distress or view it as a sign of inferiority (i.e., self-stigma). In brief, some soldiers may experience varying levels of concern regarding others' judgments about seeking mental health services and self-judgments about seeking such services.

Recently, Kim, Britt, Klocko, Riviere, and Adler (2011) developed a measure that identifies several barriers to soldiers' use of mental health services (e.g., negative beliefs about treatment and practical barriers such as difficulty scheduling appointments). One of the three subscales of this measure also assesses the stigma that soldiers may experience. Although the subscale appears to have adequate face validity in examining potential concerns about the impact of seeking help on one's career (e.g., "It might affect my security clearance" and "It would harm my career"; Kim et al., 2011, p. 74), it does not assess the full range of stigma discussed above (i.e., both public and self-stigma). This is an important omission as public stigma has been theorized to negatively affect a person through the internalization of the negative associations with the label of mental illness (i.e., self-stigma; Link, Cullen, Struening, Shrout, & Dohrenwend, 1989). Specifically, researchers have tested models in which the self-stigma for seeking help was found to fully mediate the relationship between public stigma and both attitudes towards and intentions to seek mental health services, at least for civilian groups (Bathje & Pryor, 2011; Ludwikowski, Vogel, & Armstrong, 2009; Vogel, Wade, & Hackler, 2007; Vogel, Shechtman, & Wade, 2010). Thus, self-stigma may be as or even more important than public stigma in decisions to seek help (Vogel, Wade, & Haake, 2006; Vogel et al., 2010).

The distinction between public stigma and self-stigma can also be seen in the different ways people assess their own mental health concerns and their treatment. For example, although people might be aware of the public stigma associated with seeking help, they might have lower self-stigma for seeking help because of previous positive experiences with mental health services or knowing someone who benefited from mental health services (Vogel & Wade, 2009). Consequently, although a person might accurately perceive a general public stigma, he or she may know from personal experience that seeking help is beneficial and have less concern about it personally, and, therefore, experience lower self-stigma for seeking help. As a result, whereas it has long been argued that mental health professionals should develop interventions at the community or group (i.e., public stigma) level, it may be as or even more important for mental health professionals to consider ways to intervene at an individual (i.e., self-stigma) level if the goal is to increase service use. Therefore, the current research specifically targets public and self-stigma as it may apply to active duty soldiers by examining the aspects of public and self-stigma that may interfere with a soldier's decision to seek mental health services.

The Current Study

On the basis of theory that public and self-stigma are important factors that inhibit emotionally distressed individuals from seeking mental health services (Corrigan, 2004), as well as stigma-related concerns that may be military specific (e.g., concerns about the effect of seeking mental health services on promotion, level of responsibility, security clearance), we developed a measure of military mental health stigma. Specifically, we examined the psychometric properties of a stigma scale intended to measure military-specific public and self-stigma.

Method

Participants

Participants were 1,038 active duty soldiers from a large Army installation with a high operational tempo. Soldiers' mean age was 26.7 (standard deviation [*SD*] = 5.9) years, and 93.6% were male. Additional demographic characteristics are displayed in Table 1. The demographic characteristics of our sample are similar to those reported in research conducted with a large military cohort representative of the U.S. Army (Milliken, Auchterlonie, & Hoge, 2007). Military occupational specialties (MOS) were distributed as follows: Infantry (general combat arms) 37.0%, Field Artillery (operation of cannon, rocket, and missile fire) 14.9%, Armor (operation of armored equipment and fire weapons) 6.1%, Signal (Communication) 6.0%, Medical 8.3%, Mechanical Maintenance 6.0%, Quartermaster (supply, service, and other logistical support) 5.9%, Other 14.4%; 1.4% of the soldiers did not report their MOS.

Table 1
Sample Demographic Characteristics

Race/Ethnicity[a]	*Percent*	*n*
White/Caucasian	69.9 (%)	726
Black/African American	9.8 (%)	102
Hispanic/Latino	14.9 (%)	155
Asian/Pacific Islander	6.1 (%)	63
American Native/Alaska Native	1.9 (%)	20
Rank[b]		
Enlisted-1- 4	54.9 (%)	570
Enlisted-5- 9	38.4 (%)	399
Officer or warrant officer	6.5 (%)	67
Educational level[c]		
High school or equivalent	48.1 (%)	499
Some college	35.3 (%)	366
Associate of arts/technical degree	5.7 (%)	59
Bachelor's degree	8.5 (%)	88
Graduate degree	1.9 (%)	20
Relationship status[d]		
Married	55.5 (%)	576
Single/never married	33.9 (%)	352
Divorced or legally separated	10.3 (%)	107
Widowed	0.001 (%)	1

[a]Respondents were able to choose more than one race/ethnic group.
[b]Two respondents did not report.
[c]Six respondents did not report.
[d]Two respondents did not report.
$N = 1{,}038$.

Procedure

Data were anonymously collected from redeploying soldiers prior to the completion of the Department of Defense (DoD) Post-Deployment Health Reassessment program (PDHRA) between February 2010 and January 2011. The PDHRA is a global health assessment program that was mandated in 2005 by the DoD (Assistant Secretary of Defense for Health Affairs, 2005). All service members are mandated to complete this post-deployment screening 90 to180 days after returning from an operational deployment (i.e., soldiers' deployment with their unit to complete a mission in another country such as Afghanistan, Kuwait, etc.).

The last author, a civilian bachelor's level research assistant, presented soldiers with informational letters and invited them to complete the stigma questionnaire in the clinic waiting room. Any active duty soldier completing the PDHRA was eligible for inclusion. Completion of the stigma questionnaire was entirely voluntary and anonymous. In addition to the stigma measure, soldiers completed a brief demographic questionnaire that included questions about age, race, gender, marital status, education, duty status, deployment history, rank, military occupational status, and other military variables.

Of soldiers approached for participation, the response rate was approximately 98%. The high level of participation is likely to be attributable to the anonymity of the data collection, the fact that soldiers were unoccupied, and military culture, which encourages goodwill and cooperation. Of the 1,261 surveys collected, 1,038 surveys were deemed eligible for analysis. Surveys not considered for inclusion had one or more items missing, and/or the response pattern indicated that the data were not valid (i.e., answered reversed items the same). The Institutional Review Board at the Army Installation where the data were collected approved this protocol.

Military Stigma Measure Item Selection and Development

Two DoD civilian psychologists and a bachelor's-level psychology graduate student (authors 1, 2, and 5) constructed a pool of public stigma items guided by theory and research (Porter & Johnson, 1994), rational deduction, and consultation with subject matter experts and representatives of the target population of active duty service members. A total of 39 public stigma items were generated and reduced to the final pool of 18 items. These resulting public stigma items focused on soldiers' concerns regarding their (a) public image if they were to seek care, (b) ramifications on their career, (c) concerns with confidentiality, and (d) impact on how peers, leaders, and other military personnel would perceive them. In turn, because self-stigmatizing beliefs and feelings of inadequacy are internal to individuals and, as such, not likely to differ between soldiers and civilians, the self-stigma items were adapted from a previously developed 10-item self-stigma scale (Self-Stigma of Seeking Help scale [SSOSH]; Vogel et al., 2006). These items focus on individuals' self-perceptions in relation to seeking mental health care.

Reverse coded items were developed for each of the scales to assist in identifying inconsistent responding. The domains of mental health stigma were then evaluated by the item development team, current and former service members, and by two subject matter experts to assess for redundancy and poor wording, relevance of content, ease of reading, and completion time. The final measure comprised 28 items (18 public stigma and 10 self-stigma items; see Table 2) and was scored on a 4-point scale ranging from 1 to 4 (1 = *Definitely Disagree*, 2 = *Somewhat Disagree*, 3 = *Somewhat Agree*, 4 = *Definitely Agree*).

Results

Our goal was to develop a measure of the full range of stigmatization associated with seeking mental health services for military personnel. To develop the scale, we first randomly split the full sample into a scale development group ($n = 520$) and confirmatory group ($n = 518$).

Sample 1: Exploratory Factor Analysis

We conducted an exploratory factor analysis in the development sample ($n = 520$) using SPSS 19 on the 28 items to empirically evaluate the items and determine the underlying factor structure based on the data we collected. Because the K1 rule (i.e., eigenvalues >1) might overestimate the number of factors, we used parallel analysis to determine the number of factors for retention (Hayton, Alle, & Scarpello, 2004). One-, two-, and three-factor models were tested, and the two-factor model was adopted because it provided the best interpretation of the data. This two-factor model accounted for 52.1% of the variance (see Table 2 for factor loadings using both principal axis factor [exploratory factor analysis] and principal components [principal component analysis] extraction methods with oblique [direct oblimin] rotations).[1]

We used the oblique rotation because the two expected constructs of public and self-stigma are theoretically linked. The resulting item loadings were largely the same, using either exploratory factor analysis or principal component analysis, and both approaches supported the usefulness of all but two items (i.e., " I trust military mental health services" and "People who are important to me would think less of me for seeing a mental health provider"), which did not load above .4 on either factor and so were dropped. Factor 1 contained 16 items loading above .4 on the first factor and less than .4 on the second factor. This factor contained the developed public stigma items and was labeled *Public Stigma* ($\alpha = .94$; mean [M] = 32.46, $SD = 10.94$). Factor 2 contained the 10 self-stigma items, which all loaded above .4 on the second factor and less than .4 on the first factor. This second factor was labeled *Self-Stigma* ($\alpha = .89$, $M = 19.69$, $SD = 6.43$). The two subscales correlated .67. These results support previous theoretical assertions (Corrigan, 2004) and help-seeking research (Vogel et al., 2006) regarding the presence of two separate kinds of stigma (public and self).

[1]The full-item correlation matrix is available from the authors upon request.

Table 2
Factor Loadings Results using EFA, PCA, and CFA approaches

	EFA[a] Sample 1 (N = 520)		PCA[a] Sample 1 (N = 520)		CFA[b] Sample 2 (N = 518)	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
9. My chances of promotion would be harmed if I sought mental health services.	**.81 [.76]**		**.81 [.78]**		**.70*****	
25. My peers would think I was unreliable if they knew I was receiving mental health treatment.	**.79 [.83]**		**.79 [.83]**		**.86*****	
3. I would be given less responsibility, if chain of command knew I was seeing a mental health provider.	**.79 [.74]**		**.79 [.76]**		**.67*****	
20. I'd lose the respect of my subordinates if they found out I was receiving mental help.	**.76 [.82]**		**.76 [.82]**		**.83*****	
24. I am afraid that my chain of command would find out what I told a mental health provider.	**.75 [.70]**		**.79 [.74]**		**.70*****	
18. My peers would think less of me if they knew I was getting help from a mental health provider.	**.75 [.83]**		**.75 [.83]**		**.88*****	
11. I am open to seeking services, but I worry about how it could hurt my career.	**.73 [.64]**		**.77 [.68]**		**.62*****	
5. People would judge me poorly if they knew that I received mental health services.	**.71 [.76]**		**.72 [.77]**		**.73*****	
15. It would make my problems worse if my peers knew I was seeing a mental health provider.	**.67 [.76]**		**.69 [.77]**		**.84*****	
21. There are things I am afraid to talk about because of what others will think.	**.65 [.65]**		**.70 [.68]**		**.65*****	
7. People I respect would think less of me if they knew I had mental health problems.	**.61 [.70]**		**.63 [.71]**		**.73*****	
12. My reputation in my community would be harmed if people knew that I had seen a mental health provider.	**.60 [.69]**		**.62 [.70]**		**.78*****	
6. I would worry about my personal problems being part of my military records.	**.58 [.55]**		**.64 [.60]**		**.59*****	
22. A person seeking mental health treatment is seen as weak.	**.56 [.71]**		**.58 [.72]**		**.75*****	
13. I would be afraid that my peers would find out what I tell my mental health provider.	**.55 [.57]**		**.60 [.61]**		**.69*****	
4. If my chain of command discovered I was seeing a mental health provider, I would NOT lose their respect. (Reverse coded)	**.47 [.49]**		**.49 [.51]**		**.49*****	
1. People who are important to me would think less of me for seeing a mental health provider.	.38 **[.54]**		.39 **[.55]**		–	
27. I trust military mental health services. (Reverse Coded)	.35 **[.43]**		.37 **[.45]**		–	

Table 2
Continued

	EFA[a] Sample 1 (N = 520)		PCA[a] Sample 1 (N = 520)		CFA[b] Sample 2 (N = 518)	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
19. If I went to a therapist, I would be less satisfied with myself.		**.69 [.78]**		**.70 [.79]**		**.81*****
16. I would feel inadequate if I went to a therapist for psychological help.		**.67 [.82]**		**.65 [.80]**		**.86*****
10. I would feel okay about myself if I made the choice to seek professional help. (Reverse coded)		**.62 [.61]**		**.71 [.69]**		**.46*****
23. It would make me feel inferior to ask a therapist for help.		**.60 [.78]**		**.59 [.76]**		**.84*****
17. Seeking psychological help would make me feel less intelligent.		**.58 [.73]**		**.59 [.73]**		**.77*****
26. My self-confidence would NOT be threatened if I sought professional help. (Reverse coded)		**.55 [.57]**		**.63 [.64]**		**.41*****
2. My self-confidence would be harmed if I got help from a mental health provider.		**.52 [.67]**		**.55 [.69]**		**.71*****
8. My view of myself would change if I made the choice to see a therapist.		**.52 [.63]**		**.55 [.66]**		**.68*****
28. My self-esteem would increase if I talked to a therapist. (Reverse coded)		**.48 [.40]**		**.63 [.51]**		**.29*****
14. I would feel worse about myself if I could not solve my own problems.		**.48 [.62]**		**.51 [.53]**		**.65*****

Note. EFA = exploratory factor analysis; PCA = principal component analysis; CFA = confirmatory factor analysis.
Bolded items were retained for the final scale. Item numbers are listed in the order in which they appear on the scale. The Military Stigma Scale should be administered with these instructions: "Please choose the response that best matches how much you agree or disagree with each statement. **There are no right or wrong answers.** Circle the number that is right for you. This questionnaire is anonymous so do not make any identifiable marks. Although some of the items may look alike, it is important to us that you answer all of them." Items numbers 4, 10, 26, and 28 are reverse scored and then all items are summed so that higher scores reflect greater perceptions of military stigma for seeking psychological help.
[a]Factor loadings not in [] are from pattern matrix. Factor loading in [] are from structure matrix.
[b]Completely Standardized Factor Loadings
$^{***}p < .001$.

Sample 2: Confirmatory Factor Analysis

To further examine the factor structure, we next conducted confirmatory factor analysis with the confirmatory sample ($n = 518$) using the full information maximum likelihood (FIML) method in LISREL (version 8.8). As suggested by Hu and Bentler (1999), three indices were used to assess the goodness of fit of the models: the comparative fit index (CFI; values of .95 or greater indicate a model that fits the data well), the root mean square error of approximation (RMSEA; a value of .06 or less indicates a model that fits well), and the standardized root mean square residual (SRMR; values of .08 or less indicate a good fitting model). Because the maximum likelihood procedure assumes normality, we first examined the multivariate normality of the data. The result indicated that the data were not multivariate normal ($p < .001$). Therefore, the Satorra-Bentler scaled chi-square (Satorra & Bentler, 1988) was used. The results indicated that the current data fit the two-factor model found above, scaled χ^2 (298, $N = 518$) = 929.74,

$p < .001$, CFI = .98, RMSEA = .064 (90% confidence interval [CI], .059, .069); SRMR = .050. The factor loadings are presented in Table 2 (column 3).

In turn, examination of the item loading modification indices led to no additional changes that improved the model fit. The two subscales were correlated (.72). Therefore, we first tested a one-factor model. However, this model did not fit the data as well as the two-factor model, $\Delta\chi^2$ [5, $N = 518$] = 99.41, $p > .001$, and provided only a marginal fit to the data, scaled χ^2 (299, $N = 518$) = 1665.53, $p < .001$, CFI = .96, RMSEA = .094 (90% CI = .090, .098), SRMR = .064. Second, we examined a two-factor model with a higher order factor present. The results indicated that this new two-factor model with a higher order factor fit the data, scaled χ^2 (272, $N = 518$) = 728.99, $p < .001$, CFI = .99, RMSEA = .057 (90% CI = .052, .062); SRMR = .41. The correlation between public and self-stigma after controlling for this higher order factor was .58. The internal consistency scores for the subscales in this sample were .95 (Public Stigma) and .87 (Self-Stigma). The mean for the Public Stigma scale was 30.99 ($SD = 11.38$) and mean for the Self-Stigma scale was 18.54 ($SD = 6.05$).

Additional Analyses

We named the newly developed 26-item scale the Military Stigma Scale (MSS). To examine the readability of the items, we calculated the Flesch-Kincaid Grade Level Readability Formula (Kincaid, Fishburne, Rogers, & Chissom, 1975). The readability of the resulting items was 6.41 (readability of the average sixth grader or 11- to 12-year-old; see Table 2 for wording of items). Using the total sample we also examined some initial evidence regarding the scale's usefulness in different racial/ethnic groups, for women and men, across enlistment level, and among those who had used mental health services. Previous research has suggested some differences in public and self-stigma across these groups with self-stigma producing larger between-group differences than public stigma (Vogel et al., 2006, 2007, 2010). Validating these differences in a military sample would provide some initial validity evidence for the scale as well as provide some further evidence of the uniqueness of the two subscales (and the need to assess both in military samples).

First, we examined the internal consistencies scores of the Public Stigma subscale across each of the following: racial/ethnic groups: White/Caucasian .95 ($n = 703$), Black/African American .95 ($n = 87$), Latino/Hispanic .92 ($n = 137$), Asian American .95 ($n = 53$), multiracial/other .93 ($n = 54$); biological sex: male .94 ($n = 972$) and female .94 (n = 63); and rank: E1-E4 .95 ($n = 570$), E5–5-9 .94 ($n = 399$), and O1-O5 .92 ($n = 64$). Then we examined the internal consistency scores of the Self-Stigma subscale across each of the following: racial/ethnic groups: White/Caucasian .90 ($n = 703$), Black/African American .80 ($n = 87$), Latino/Hispanic .86 ($n = 137$), Asian American .84 ($n = 53$), multiracial/other .85 ($n = 54$); biological sex: male .88 ($n = 972$) and female .87 (n = 63); and rank: E1-E4 .87 ($n = 570$), E5–5-9 .89 (n = 399), and O1-O5 .93 ($n = 64$). In all, whereas some small differences in reliability emerged, the results suggest that the scale is providing adequate reliability estimates for use among these different samples.

Next, we examined potential mean differences across the groups using analysis of variance (ANOVA). Supporting the uniqueness of the two scales, we found sex differences with males ($M = 19.46$, $SD = 6.15$) scoring higher than females ($M = 17.32$, $SD = 5.66$) on self-stigma, $F(1, 1035) = 7.22$, $p = .007$, $\eta_p^2 = .01$, but not on public stigma ($p = .76$), which is consistent with previous research findings regarding stigma differences between women and men (e.g., Vogel et al., 2007). Similarly, there was a significant difference across racial/ethnic groups for self-stigma, $F(1, 1034) = 2.59$, $p = .035$, $\eta_p^2 = .01$, but not public stigma ($p = .36$). Follow-up Tukey analyses showed that White/Caucasians in the sample had higher self-stigma scores ($M = 19.64$, $SD = 6.28$) than Black/African Americans in the sample ($M = 17.71$, $SD = 5.53$). All other groups were not significantly different ($p > .05$). This finding is also similar to one previous study regarding public and self-stigma differences between racial/ethnic groups among a sample of men (e.g., Vogel, Heimerdinger-Edwards, Hammer, & Hubbard, 2011).

There was also a significant difference among those who sought help previously ($M = 18.68$, $SD = 5.81$) and those who did not ($M = 19.70$, $SD = 6.26$) on self-stigma, $F(1, 963) = 5.98$, $p = .015$, $\eta_p^2 = .01$, but not on public stigma ($p = .50$). This makes sense because seeking treatment might change one's own view but not the views of others (Wade, Post, Cornish, Vogel, & Tucker,

2011). Finally, no differences were present for self-stigma ($p = .26$) or public stigma based on rank ($p = .62$) suggesting that across rank public- and self-stigma are similar.

Discussion

In this research, we developed and tested the MSS, a measure of military mental health stigma that is designed to capture the full range of stigmatization associated with seeking mental health services. The MSS comprises two internally consistent dimensions that appear to capture the constructs of public stigma and self-stigma. Both factors were found to be part of a higher order stigma factor. These results are concordant with Corrigan's (2004) and others' (e.g., Vogel et al., 2006) theoretical assertion that stigma entails two distinct forms: public stigma (perceptions of external stereotypes and prejudices) and self-stigma (internalized feelings of incompetence). The results also consistent with Greene-Shortridge et al.'s (2007) assertion that these two types of stigma are present among military samples and could inhibit military personal from seeking treatment. As such, our research extends existing research in demonstrating that public and self-stigma are valid dimensions of stigma that are relevant to active duty soldiers.

Follow-up analyses conducted with the MSS provided additional support for the constructs of public and self-stigma in relation to military mental health care. First, we examined the internal consistency of public and self-stigma across biological sex, race/ethnicity, and rank. Only minor differences in internal consistency were observed for public and self-stigma, indicating that the MSS public and self-stigma scales provide adequate reliability estimates for these different groups. Second, we examined group differences on levels of public and self-stigma. Consistent with previous research, we found sex differences in self-stigma (Vogel et al., 2007). Males in our sample scored significantly higher on self-stigma than did females.

We also found significant racial/ethnic group differences in self-stigma. Specifically, White/Caucasians scored higher on self-stigma than did Black/African Americans; this finding is similar to a recent study examining public and self-stigma differences between racial/ethnic groups among a large community sample of men (Vogel, et al., 2011) and is consistent with researchers findings that endorsement of the male gender role is linked to greater self-stigma in men (Magovcevic & Addis, 2005).

Finally, self-stigma was higher among soldiers who had not received mental health services. Interestingly, there were no observed group differences in public stigma. In all, these findings provide additional evidence of the uniqueness of the two factors—public and self-stigma—and suggest the need to assess these dimensions in future military stigma research.

Our finding that soldiers who had received mental health services in the past reported lower self-stigma as compared with those who had not received mental health services in the past is consistent with Wade et al.'s (2011) findings that a good experience with a therapist, or knowledge of someone who has had such an experience, may reduce self-stigma. It is also worth noting that individuals who have a positive therapeutic experience that reduces self-stigma may experience more enduring treatment benefits (Link, Struening, Rahav, Phelan, & Nuttbrock, 1997). Self-stigma has been shown to produce lasting negative effects on well-being, even when mental health symptoms largely remit (e.g., stigmatized individuals may continue to be rejected even after symptoms remit, hold expectations of social rejection, adopt a "secretive" interactional style that engenders social isolation; Link et al., 1997). Over time, enduring harmful effects of self-stigma may even counteract or nullify positive treatment outcomes (Link et al., 1997) and negatively affect well-being (Rosenfield, 1997), whereas reductions in self-stigma are associated with enduring positive treatment effects and quality of life (Rosenfield, 1997).

Strategies to reduce public stigma may also help to reduce self-stigma, given the research findings that support the supposition that self-stigma may result from an internalization of public stigma (Vogel et al., 2007; Bathje & Pryor, 2011). In addition to influencing decisions to enter treatment, public stigma also influences policy decisions and resources that are allocated to increase access to mental health care. A psychometrically strong measure of public stigma is the first step in assessing the scope of the problem and potentially targeting areas for intervention. Currently, the military is implementing a number of actions aimed at identifying and treating service members with mental health problems warranting clinical intervention (Hoge et al.,

2006; Milliken et al., 2007; Rachmand, Acosta, Burns, Jaycox, & Pernin, 2011). Additional efforts aimed at reducing public stigma may also be useful in de-stigmatizing mental health services and increasing access to care. Effective implementation of such efforts requires a validated measure of military public stigma. The MSS provides initial and promising results in this direction.

This research has a number of limitations that should be noted. Although our sample was drawn from a large military base, and the demographic characteristics of our sample mirror military population demographics (Milliken et al., 2007), our findings still might not generalize to the larger military population. An additional limitation is that this initial research assessed only one aspect of the construct validity of the MSS (i.e., levels of public and self-stigma in individuals who had received mental health services in the past). Future research should address this shortcoming by examining the links between the MSS and help-seeking attitudes, intentions to seek mental health services, and future use of mental health services. It is also possible that the soldiers composing our sample were guarded in their responses, or, alternately, submitted exaggerated responses. The voluntary and anonymous conditions under which the data were collected are likely to have minimized this risk, however. It is also possible that some soldiers experiencing high levels of stigma declined to participate, although we do note that nearly all soldiers who were approached for participation volunteered.

In sum, untreated, or delayed treatment of, military mental health problems incur both short-term and long-term costs. Successful treatment of stigma within the military mental health system may ultimately decrease the burden on the Veteran Affairs Healthcare system, which has increased dramatically since the inception of the conflicts in Iraq and Afghanistan (Seal et al., 2009). The U.S. military has invested significant resources in identifying service member mental health problems and treatments to address such problems. To derive maximum benefit from these efforts, it is necessary to understand how stigma may negatively influence service members' decisions to seek mental health care. Valid measurement of theoretically relevant domains of military mental health stigma that may interfere with access to care is essential. Research is currently underway to further validate the MSS and to use it as an outcome measure and self-assessment tool as part of an online stigma workshop (see http://afterdeployment.org/) that is being designed to reduce military mental health stigma.

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