Research Design and Analysis II: Final Project

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Date

Introduction

Posttraumatic stress disorder (PTSD) is the most commonly diagnosed mental health condition among military service members and veterans. As such, it is important to understand related risk factors so as to prevent its onset and identify those who may be at higher risk for the disorder. There are several factors that are found to be correlated with higher PTSD severity, such as depression, military branch, race, and age. The extent to which these factors contribute to PTSD severity, however, is not well known. Therefore, the purpose of the current study is to explore the relationship between the aforementioned risk factors with PTSD symptom severity in a sample of active duty military service members and veterans. A secondary aim of this study is to assess if there are differences in estimated risk between military branches and PTSD symptoms, as results may guide the implementation of specific resources to a particular branch.

Methods

Participants and Procedure

Participants were 872 female service members and veterans currently in a romantic relationship. Participants completed all survey measures anonymously through a secure online platform, Qualtrics.

Measures

All measures were self-report questionnaires. PTSD symptoms were measured by the Posttraumatic Checklist for DSM-5 (PCL-5), with higher total scores indicating worsened PTSD symptom severity. Depressive symptoms were measured by the Patient Health Questionnaire-8 (PHQ-8), with higher total scores indicated worsened depressive symptom severity. A demographic inventory assessed participant age, race (Black, White, Latina, Native American, or

Biracial), and military branch (Air Force, Army, Coast Guard, Marines, Navy or multiple branches).

Analytic Plan

Descriptive statistics will assess sample characteristics, including mean values or frequencies on each of the study variables. The assumptions of linear regressions will be tested. Specifically, normality and homoscedasticity of residuals will be tested (Chapters 16 and 17). Next, a simple regression model regressing PHQ-8 total scores onto PCL-5 total scores will be run to measure the effect of depression on PTSD symptoms (Chapter 2). Since theory and previous literature shows that PTSD is highly correlated with depression, it would be interesting to see if this relationship still holds with the addition of covariates. Therefore, a multiple regression will be run to control for the effects of age, race, and military branch in the association between depression's estimated effect on PTSD (Chapter 3). If multiple covariates also have a significant estimated effect on PTSD scores, the relative importance of the predictors will be assessed (Chapter 8). It is hypothesized that depression will be a significant predictor of PTSD severity, even when controlling for covariates. To assess for the secondary aim of the effect of military branch on PTSD symptoms, a multi-categorical predictor regression will be analyzed (Chapters 9 and 10). Lastly, the current study will assess military branch as a potential moderator of the association between depression and PTSD (Chapters 13 and 14). It is hypothesized that the Army and the Marines will have the largest influences on PTSD symptoms, as these branches experience the most combat.

Results

Table 1 shows the sample demographic characteristics. As can be seen from the residual plots (Appendix A), there appears to be a slight violation of both the assumptions for normality

and homoscedasticity of the residuals. However, there may be some points that have heavy influence on the sample according to Cook's distance. To assess the influence of depression on PTSD, regression analyses show that for each one unit increase in total depression symptoms, there is an associated 2.27 point increase in total PTSD symptoms, $F(1, 729) = 727.4$, $p < .001$. Further, when covarying for one's age, race, and military branch, the effect of depression on PTSD is such that for each one unit increase in total depression symptoms, there is an associated 2.23 unit increase in total PTSD symptoms, $F(11, 663) = 62.31$, $p < .001$. Interestingly, no other covariates significantly predicted PTSD symptoms, so relative importance of predictors was not assessed.

To assess the secondary aim if military branch predicted PTSD symptoms, a multi-categorical regression was tested. Overall, military branch was not a significant predictor of PTSD symptoms, $F(5, 669) = 1.69$, $p = .14$. (For the sake of practice, I will proceed as if this were significant so that I can test the moderation.) To test if military branch moderates the association between depression and PTSD, a conditional effects test was run. Results show that the association between depression and PTSD does not change depending on the level of military branch, ps $> .16$.

Discussion

Results supported the hypothesis that depressive symptoms significantly predicted PTSD symptoms, even when covarying for participant age, race, and military branch. Interestingly, the hypothesis that the Army and/or Marines would be stronger predictors of PTSD than the other branches was not supported. In all, the current study has significant implications for practice. Given that there are several psychopharmacology treatments for depression and few supported medications for PTSD, according to the results, it may be beneficial to treat depression even if

PTSD is the primary diagnosis. Additionally, since no significant differences were found between military branches, clinicians should screen for PTSD equally across all branches, despite the diagnosis historically being focused heavier amongst soldiers and marines.

Table 1. Demographics

Characteristic	*n (%) or M (SD)*	
Race		
White	529	(78.4%)
Black	31	(4.6%)
Hispanic	44	(6.5%)
Native American	4	(0.6%)
Biracial	67	(9.9%)
Age	32.3	(7.3)
Branch		
Navy	106	(15.9%)
Coast Guard	6	(0.9%)
Marines	69	(10.4%)
Air Force	124	(18.6%)
Army	361	(54.2%)
Relationship Duration	74.4	(66.7)
PCL-5 Total Score	24.3	(23.0)
PHQ-8 Total Score	9.6	(7.3)

Note. PCL-5 = Posttraumatic Check List for DSM-5; PHQ-8 = Patient Health Questionnaire – 8

Appendix A. Assumption Tests