A New Measure: The Student Veteran Stressors Inventory

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Student veterans are a special population of interest in educational institutions and our understanding of this population is far from complete (Livingston, Havice, Cawthon, & Fleming, 2011). Unique problems faced by student veterans include challenges of feeling misunderstood by those around them, resulting in social isolation (Branker, 2009; Elliot, Gonzalez, & Larsen, 2011), coupled with suicidal thoughts, and severe anxiety and depression (Rudd, Goulding, & Bryan, 2011). Student veterans are also more likely to engage in behaviors that pose health risks (Widome, Lask, Gulden, Fu, & Lust, 2011), in addition to being affected by trauma and/or Post-traumatic Stress Disorder (PTSD; DiRamio, Ackerman, & Mitchell, 2008; Rudd et al., 2011).

Research on student veterans alone comprise mostly of case study reports (DeRamio, Ackerman, & Mitchell, 2009; Durdella & Kim, 2012). The qualitative nature of research on student veterans predominates the literature; less focus has been placed on developing measures to assess the needs of student veterans (Gwin, Selber, Chavkin, & Williams, 2012). It is important to identify and meet the needs of this special population (Rudd et al., 2011; Widome et al., 2011). The Student Veteran Stressors Inventory (SVSI) is a proposed instrument that will aid in identifying the stressors in the lives of student veterans. The primary research question for this study is as follows: What is the efficacy of an instrument (SVSI), based on aspects of suicidality, student stress, life stress, family stress, and social stress in assessing stressors in student veterans? It is hypothesized that, the inventory will prove to be sound in assessing stressors in student veterans.

Method

Participants

DiRamio et al. (2008) defines student veterans as soldiers who leave combat and enroll in post-secondary institutions as students; they will comprise the participants in this study.
Recruitment of student veterans will take place on a college/university campus in the United States through postings, announcements, advertisements and referrals from on-campus counseling and military student offices. Participants must meet the following criteria to be included in the study, i.e., they must have experienced combat missions and be diagnosed with Post-traumatic Stress Disorder (PTSD) and/or have PTSD symptoms. Demographically, participants will include both male and female student veterans, between the ages of 25-35 years old, based on information presented by Jesnek (2012). Exclusion of participants will not be based on ethnicity, education, and/or social economic status. However, exclusion criteria consist of: having a current psychotic disorder diagnosis, and/or an organic mental disorder that might severely interfere with their ability to participate in the study. From the pool of eligible individuals, approximately 110 student veterans will be randomly selected to participate in the study based on Warner’s (2013) recommendation (i.e., N>100).

**Measures**

During the initial assessment, participants will be administered the Post-traumatic Stress Disorder Check List – Military Version (PCL-MS; Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL-M will confirm that selected student veterans have met criteria for PTSD and/or PTSD symptomology. The American Psychiatric Association (2013) defines PTSD as a psychiatric disorder that triggers feelings of intense fear, helplessness, and horror when one is exposed to stressors.

The Student Veterans Stressors Inventory, SVSI, will be the primary instrument in this study; it will comprise of 82 Likert type questions, all of which will be specifically worded to address student veterans. It is assumed that the SVSI comprises of the following five subscales addressing areas related to: 1) Suicidality; 2) Student Stress; 3) Life Stress; 4) Family Stress; and
5) Social Stress. Suicidality encompasses attitudes and behaviors that inform and are related to an individual’s risk of suicide (Lee, 1992). Suicidality will be assessed by incorporating and modifying 7 items from the Suicide Probability Scale (Cull & Gill, 1982; Eltz et al., 2007); e.g., I feel it would be less painful to die than to keep living as a veteran with mental and physical scars; 0, *none or a little of the time* to 3, *most or all of the time*. Student stress encompasses cognitive and behavioral experience processes including mental stress sources and mental stress reactions (Ji & Zhang, 2011) in relation to college/university. Student stress will be assessed by incorporating and modifying the 7 items of the College Student Stress Scale (Feldt, 2008); e.g., During this semester, I am anxious or distressed about academic matters being compromised as a result of my PTSD/trauma symptomology; 0, *strongly agree* to 4, *strongly disagree*. Life stress examines the degree to which circumstances in the participant’s life is/are identified as being stressful. Life stress will be assessed by incorporating and modifying the 14 items of the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983; Remor, 2006); e.g., In the last month, how often have you felt confident about your ability to handle your personal problem(s) based on your PTSD/trauma symptoms and student veteran status; 0, *never* to 4, *very often*. Family stress includes stressors from partners’ relationship, parent-child relationships, and employment (Cassidy, Lawrence, Vierbuchen, & Konold, 2013). Family stress will be assessed by incorporating and modifying 34 items from the Family Inventory of Resources and Stressors (FIRST; Lawrence, 1998); e.g., Since becoming a veteran and returning home, a lot more arguments or fights between myself and someone in my family are taking place; 1, *no, never* to 4, *yes, a lot*. Social stress involves the absence or inaccessibility of individuals on whom you can rely, individuals who let you feel cared for, valued, and loved (Sarason, Levine, Basham, & Sarason, 1983). Social stress will be assessed by incorporating and
modifying the 20 items of the Social Support Inventory (SSI; Timmerman, Emanuels-Zuurveen, & Emmelkamp, 2000); e.g., Individuals outside my family are present and active in supporting my actions since I became a student veteran; 1, *much too little support* to 5, *much too much support*. Additionally, participants selected for this study will be assessed using the Mental Status Exam (MSE; Nussbaum, 2013) and they will also be asked to complete a demographic scale assessing age, gender, relationship status, grade-point average, primary residence, and year in school. Individual interviews and testing will be administered in comfortable, well-lit, and spacious confidential rooms on the identified college/university campus.

**Procedure**

Student veterans who volunteer to participate in this study, will first be administered the PCL-M to determine PTSD criteria. From the pool of eligible participants, i.e., those who met criteria to participate in the study, approximately 110 student veterans will be randomly selected as participants of the study. Participants will all be assessed on the MSE and then administered the SVSI, followed by the Suicide Probability Scale, College Student Stress Scale, Perceived Stress Scale, Family Inventory of Resources and Stressors, and Social Support Inventory. Data collection will occur on the same date and time for all participants. During data analysis of the SVSI, the focus will be on attaining Chronbach’s alphas of .80 for the overall measure and for individual factors. In order for this level of internal consistency reliability to be achieved, poor items might be dropped from the SVSI. Split-half reliability of SVSI will also be calculated using the Spearman-Brown prophecy formula. Finally, validity assessments will be conducted on the SVSI, in terms of construct validity, and criterion-oriented validity using the original scales employed in assembling the SVSI (Warner, 2013).

**Proposed Statistical Analysis**
The items on the SVSI will be entered into a principle component factor analysis with varimax rotation (Warner, 2013) to explore the genuine factor structure and the psychometric properties of the inventory. Depending on the number of factors identified from the exploratory analysis; using the criteria that factors should all have eigenvalues greater than one, and the scree plot. Only items with factor loadings greater than .3 will be identified as belonging to a particular factor (Warner, 2013). In the event that an item loads with a value greater than .3 on more than one factor, the highest loading will be used (Grubbs, Sessoms, Wheeler, & Volk, 2010).

For principle component factor analysis statistic to be employed, various assumptions need to be met, including all the assumptions necessary for the use of Pearson’s r. First, scores on each \( X_i \) variable used in the inventory should be quantitative and reasonably normally distributed. Second, any association between a pair of \( X \) variables should be linear and the joint distribution of the set of variables should be multivariate normal. To determine that these assumptions are all met, histograms for each \( X_i \) variable will be created to examine the shape of the distribution of the scores. If outliers are identified, data transformations such as logs may be used to remedy problems; if the outliers are extreme, they might be dropped from the data set, allowing for an approximate normal distribution to be established. Scatter plots will be obtained for each pair of quantitative variables; these scatter plots are expected to show linear relations between variables, homogenous variance, and no bivariate outliers. If extreme scores are observed, log transformation may be employed to reduce their impact, or the decision may be made to omit the outlier(s). A third assumption is that \( R \) is not a diagonal matrix, i.e., at least some of the \( r_{ij} \) correlations that are included in the diagonal matrix differ significantly from zero. If all the off-diagonal elements of \( R \) are zero then no attempt will be made to represent the variables in the inventory using a smaller number of factors because none of the variables
correlate highly enough with each other to indicate that they are in fact measuring the same construct. As such, it is assumed that the $R$ matrix will be factorable, including a fairly large number of correlations that are at least moderate, i.e., greater than .3 in absolute magnitude. It is expected that blocks, groups, or subsets of items will be highly intercorrelated with the sets indicating that they belong to a single factor, and have low correlations between sets (Warner, 2013). Three factors are expected from this analysis, one factor related to suicidality, another related to student stress, and the third related to life/family/social stress.

**Validity Critiques**

All the scales employed in this study, directly, the PCL-M, or indirectly, Suicide Probability Scale, College Student Stress Scale, PSS, FIRST, and SSI, contain questions that adequately measure the constructs they purport to measure based on previous studies, indicating construct, content, and face validities (Blanchard, Jones-Alexander, Buckley, & Forberis, 1996; Cassidy et al., 2013; Eltz et al., 2007; Feldt & Koch, 2011; Lee, 1992; Remor, 2006; and Timmerman et al., 2000). Measures also demonstrate good criterion validity, i.e., the ability to predict the constructs they were intended to measure with a good degree of accuracy. They also have adequate levels of concurrent validity when compared with other validated scales, and good discriminant validity (Bliese et al., 2008; Cassidy et al., 2013; Eltz et al., 2007; Feldt and Koch, 2011; Forbes, Creamer, & Biddle, 2001; Keen, Kutter, Niles, & Krinsley, 2008; Remor, 2006; Timmerman et al., 2000; Weathers et al., 1993; and Wilkins, Lang, & Norman, 2011).

Examining predictive validity, this study will determine if the questions comprising the SVSI, drawn from the other identified scales, can predict student veteran stress. In relation to statistical validity, assumptions for principle components factor analysis statistic will be met, thus minimizing Type I error. The study will seek to achieve a statistical power of 0.8, and an Eta
squared effect size of 0.05; a minimum of 76 student veterans are needed for the stated power, however, 110 student veterans will be used in this study, further increasing the statistical power, and minimizing Type II error (Warner, 2013).

In relation to internal validity, since all the participants will be tested at the same time history and maturation should not be an issue. All participants will only be tested on the measures once during the study, as such; testing and instrumentation are not threats to the study. Regression towards the mean is not a threat in this study because participant selection is not based on pretest scores; PTSD criteria are the basis of participant selection. Random selection will be used to control for selection bias. Since the study has only one group of participants, contamination through treatment diffusion is not a threat, because there is no treatment involved. Attrition is a minor threat, however, all participants will only be tested once, and at the same time, reducing the probability of this threat occurring. All participants will be blind to what is assessed in the study, to control for reactivity. Generalizability of the SVSI will be limited, only applying to student veterans on college/university campuses in the United States that are characteristically similar to the student veterans used in this study.

If all the items included in the Student Veteran Stressors Inventory (SVSI) load onto distinct factors based on principle component factor analysis with varimax rotation (Warner, 2013), and the identified factors each demonstrate adequate alpha reliability values, then SVSI will be classified as a promising measure for assessing stressors in the lives of student veterans. As such, colleges/universities can better meet the needs of student veterans, by engaging in programs targeted towards minimizing stressors, which will hopefully allow more student veterans to enter and complete college/university programs in which they enroll.
MEASUREMENT PROPOSAL

References


Lawrence, E. C. (1998). *The family inventory of resources and stressors (FIRST)*. A copy can be requested from University of Virginia website:

http://curry.virginia.edu/academics/directory/edith-c.-lawrence


### Table 1

**Addressing the Validity of the Proposed Measure**

<table>
<thead>
<tr>
<th>Type of Validity</th>
<th>Definition</th>
<th>Application to Proposed Measure</th>
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</thead>
<tbody>
<tr>
<td>Construct Validity</td>
<td>Construct validity assesses the variables used to characterize hypothetical constructs in the study to determine the accuracy with which they capture those constructs (Heppner et al., 2008).</td>
<td>The PCL-M contains questions that measure the constructs that it is intended to measure; however, comparing the SVSI to the original scales will determine construct validity.</td>
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<tr>
<td>Content Validity</td>
<td>This “refers to the extent to which the items reflect an adequate sampling of the characteristic” (Girden &amp; Kabacoff, 2011, p. 8).</td>
<td>The PCL-M contains questions that adequately address the construct it is intended to measure indicating good content validity; however, comparing the SVSI to the original scales will determine content validity.</td>
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<tr>
<td>Criterion Validity</td>
<td>“Refers to the extent to which test scores correlate with a behavior (criterion) the test supposedly measures (concurrent validity) or the extent to which test scores predict that behavior (predictive validity)” (Girden &amp; Kabacoff, 2011, pp. 8-9).</td>
<td>Research indicates that the PCL-M can predict the construct it was intended to measure with a good degree of accuracy; however, comparing the SVSI to the original scales will determine criterion validity.</td>
</tr>
<tr>
<td>Concurrent Validity</td>
<td>“The correlation of a measure with performance on another measure or criterion at the same point in time” (Kazdin, 2003, p. 573).</td>
<td>The PCL-M has been identified as having good concurrent validity based on comparisons with other validated scales; however, comparing the SVSI to the original scales will determine concurrent validity.</td>
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<tr>
<td>Predictive Validity</td>
<td>“The ability of a test to predict a future behavior or future group membership that should occur if the test is a valid measure of what it purports to measure” (Warner, 2013, p. 1109).</td>
<td>The present study will seek to determine if the SVSI has predictive validity, i.e., if it can predict student veteran stress based on comparisons with the original scales from which questions were drawn. As such, predictive validity is to be determined in this study.</td>
</tr>
<tr>
<td>Face Validity</td>
<td>Similar to content validity, i.e., it focuses on “the degree</td>
<td>Based on the questions contained in the PCL-M and SVSI (i.e., the SVSI</td>
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<tr>
<td>Validity Type</td>
<td>Description</td>
<td>Example</td>
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<td>-------------------------------------------------------------------------</td>
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<tr>
<td>Convergent Validity</td>
<td>Examines “the relationship between scores on the testing instrument and scores on other instruments intended to measure the same and other constructs … there should be a high correlation between instruments that measure the same construct” (Heppner et al., 2008, p. 322).</td>
<td>The PCL-M has been identified as having good levels of convergent validity, when compared with other tests that measure the same construct; however, comparing the SVSI to the original scales will determine convergent validity.</td>
</tr>
<tr>
<td>Discriminant Validity</td>
<td>This form of validity is said to exist if, “the correlation of measures of different constructs… [are] smaller than correlations of measures of the same construct” (Heppner et al., 2008, p. 322).</td>
<td>Most of the measures used in this study were identified as having good discriminant validity; however, comparing the SVSI to the original scales will determine its level of discriminant validity.</td>
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</tbody>
</table>
## Table 2

### Addressing Threats to Internal Validity

<table>
<thead>
<tr>
<th>Type of Threat</th>
<th>Definition</th>
<th>How it will be Addressed</th>
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</thead>
<tbody>
<tr>
<td>History</td>
<td>“Any event occurring in the interim that directly or indirectly could affect the behavior being measured and therefore could account for results” (Girden &amp; Kabacoff, 2011, p. 4).</td>
<td>All participants will be tested at the same time; just a minor threat to this study.</td>
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<tr>
<td>Maturation</td>
<td>“Any change within the participant that occurs during the interim and can just as easily account for posttest performance” (Girden &amp; Kabacoff, 2011, p. 4).</td>
<td>All participants will be tested at the same time, there is no post-testing; just a minor threat to this study.</td>
</tr>
<tr>
<td>Testing</td>
<td>“This refers to posttest performance that results from pretest experience” (Girden &amp; Kabacoff, 2011, p. 4).</td>
<td>This is not a threat, all participants will be tested once.</td>
</tr>
<tr>
<td>Regression</td>
<td>“This is a predictable shift in posttest scores when participants were specifically selected because their pretest scores were extremely high or low. Posttest scores are predicted to be less extreme regardless of treatment effects” (Girden &amp; Kabacoff, 2011, p. 4).</td>
<td>This is not a threat in this study; participants are not selected based on high/low pretest scores. Selection is based on meeting PTSD criteria/symptomology and being student veterans.</td>
</tr>
<tr>
<td>Selection Bias</td>
<td>“This refers to the assignment of participants to the various test conditions on a non-random basis. Difference in performance may be associated with a participant characteristic instead of, or along with, the independent variable” (Girden &amp; Kabacoff, 2011, p. 5).</td>
<td>Random selection will be used to select the 110 participants from the eligible pool of student veterans who meet criteria; there is no need for random assignment because there is only one group in this study.</td>
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<tr>
<td>Contamination</td>
<td>Also known as diffusion of treatment, “is the unintentional spread of treatment to a control group (or groups) when participants receive information withheld from them (e.g., through conversation with experimental participants) that results in a smaller difference among group performances at posttreatment assessment” (Girden &amp; Kabacoff, 2011, p. 5).</td>
<td>This is not a threat in this study because all participants will be tested on all the measures, at the same time. There is just a single group of participants, and there is no treatment introduction in this study.</td>
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<tr>
<td><strong>Attrition</strong></td>
<td>Also known as mortality or attrition, “is the loss of particular participants from a group (or groups) in such a way that remaining participants no longer can be considered to be initially equivalent with respect to the dependent variable” (Girden &amp; Kabacoff, 2011, p. 5).</td>
<td>This is a minor threat to the present study, however, due to the large number of participants, and the single testing period, this threat is only a minor possibility.</td>
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<tr>
<td><strong>Instrumentation</strong></td>
<td>“This refers to any change in the measuring instrument and/or assessor from pretest to posttest that can just as easily explain a change in scores” (Girden &amp; Kabacoff, 2011, p. 4).</td>
<td>This is not a threat in this study, all participants will be tested once, no post-testing is involved.</td>
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<tr>
<td><strong>Combination of Selection and Other Threats</strong></td>
<td>This refers to other possible confounds that could be present in the study and account for results (Girden &amp; Kabacoff, 2011).</td>
<td>The fact that this study includes single testing and one group of participants greatly minimizes validity threats.</td>
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<tr>
<td><strong>Diffusion or Imitation of Treatment</strong></td>
<td>This might involve compensatory rivalry, where participants in the control group engage in behaviors that attempt to exceed performance of an experimental group, reducing posttreatment effects; or it might include resentful demoralization, where the performance level of the control group is lowered, increasing the differences between post-treatment group means because they were not provided with the treatment (Girden &amp; Kabacoff, 2011).</td>
<td>This is not a threat to this present study because there is only one group of participants and no treatment is involved that will result in diffusion or imitation, influencing post-testing results.</td>
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<tr>
<td><strong>Special Treatment or Reaction</strong></td>
<td>This may result in the Hawthorne effect, where participants experience positive changes/outcomes from being assigned to the treatment group, rather than from experiencing the treatment itself; or this might result form experimenter expectancy, where the researcher’s expectations for certain results (un)intentionally influence participants behaviors (Girden &amp; Kabacoff, 2011).</td>
<td>Participants will be blinded to what is assessed in the study. This is not a major threat to the present study because there is only one group of participants, and facilitators will be trained to follow protocol and not engage in special treatment of participants.</td>
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</table>