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Using the WHO-5 Well-Being Index to Identify College Students who are At-Risk for Mental Health Problems

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College students are at significant risk for mental health problems. Anxiety and depression appear to be the most common concerns, with studies generating prevalence estimates as high as 53.8% for moderate to severe depression (Garlow et al., 2008) and 52.8% for moderate to severe anxiety (Rosenthal & Schreiner, 2000). This is concerning because several studies have documented how problems with anxiety and depression negatively affect students' academic performance, class attendance, retention, career selection, relationship development, physical health, and general well-being (Baez, 2005; Miller & Chung, 2009). Compounding those problems is the fact that the vast majority of college students experiencing mental health problems do not receive treatment. This is true even though most colleges have medical and psychological treatment providers on campus, and there are many effective treatments for both anxiety and depression (Hunt & Eisenberg, 2010).

There is a clear need for colleges to do a better job of identifying students who may benefit from treatment and encouraging those students to actually seek help (Hunt & Eisenberg, 2010). Indeed, research suggests that population-based screening can encourage college students who are at-risk for mental health problems to seek treatment (Kim, Coumar, Lober, & Kim, 2011). Unfortunately, there is currently tremendous variability regarding the extent to which colleges effectively screen students for mental problems (Hunt & Eisenberg, 2010), and a shortage of measures designed for this purpose. Currently, we are aware of only one population-based screening measure that was developed specifically for use with college students. The Symptoms and Assets Screening Scale (SASS; Downs, Boucher, Campbell, & Dasse, 2013) is a

34-item measure designed to identify students at-risk for depression, anxiety, substance abuse, and eating disorders.

Although there is a relative dearth of screening measures available for professionals who work with college students, several instruments have been developed for use by physicians in order to identify patients with medical concerns who are also experiencing mental health problems. One such measure is the World Health Organization Five Well-Being Index (WHO-5; Johansen, 1998**).** While the WHO-5 measure was originally developed to assess the quality of life in patients suffering from diabetes, Topp, Ostergaard, Sondgergaard and Bech (2015) found the measure to perform well as a screening tool for individuals at-risk of depression. The WHO-5 is appealing as a screening measure because it contains only five items, is freely available in at least 31 languages, and is extremely easy to complete score, and interpret.

The purpose of the present study was to evaluate whether the WHO-5 can be used to effectively identify individuals in the general college student population who are experiencing clinically significant symptoms of depression or anxiety. To that end we evaluated the criterion validity of the WHO-5 by comparing respondent scores with reliable and valid measures of depression, anxiety, general psychological distress, and well-being. In addition, we examined the instrument's factor structure, internal consistency, and test-retest reliability. Finally, we evaluated the accuracy with which scores on the WHO-5 identified students experiencing symptoms of anxiety and depression in the severe range. We hypothesized that the WHO-5 would prove to be a reliable and valid screening tool that could be implemented in the college setting to identify students experiencing significant symptoms of depression and anxiety.

METHODS

Data was collected between October 2009 and January 2013 at the authors' institutions. Nine-hundred and three undergraduate students – 428 at a four-year public university in the Rocky Mountain West and 475 at a four-year private university in the Pacific Northwest - were recruited from Introductory Psychology courses in-person or via posted advertisements. Interested participants provided informed consent and were invited to complete paper questionnaire packets for partial course credit. The average age of the sample was 20 years (SD =4.5) and 65.2% of participants were female. Eighty percent of the sample reported their ethnicity as white, 9.9% as Asian American/ Pacific Islander, 3.5% as Latino/Hispanic, 3.4% as Bi- or Multi-racial, 1.5% as Native American, and 0.8% as African American. In order to examine test-retest reliability, a subset of participants (N = 259) from one of the data collection sites completed the measures a second time, one to two weeks later. The authors' Institutional Review Boards approved all procedures and materials used in this study.

Measures

WHO-Five Well-Being Index (WHO-5). The WHO-5 is a five-item self-report instrument that assesses well-being (e.g., "I have felt calm and relaxed") over the past two weeks on a 6-point Likert scale (0 = "not present," to 5 = "constantly present"). Scores on the WHO-5 range from 0 to 25, and higher scores indicate greater well-being. A cut score of 12 or lower indicates poor well-being and that further testing for depression should be done. The WHO-5 has demonstrated good reliability and validity and the ability to identify adults experiencing depression in medical settings in several countries across Africa, Asia, Australia, Europe, North America, and South America (see Topp et al., 2015).

Depressive Symptoms. On the Patient Health Questionnaire Depression Scale 8-item version (PHQ-8; Kroenke & Spitzer, Williams, & Lowe, 2010), respondents report the frequency

of each of the DSM diagnostic criteria for a major depressive episode, except suicidal ideation, over the past two weeks, using a four-point scale. A cut score of 18 or higher indicates symptoms in the severe range (Kroenke et al., 2010). The PHQ-8 has excellent sensitivity (99%) and specificity (91-92%) for detecting depression (Kroenke et al., 2010), and the full 9-item version has been successfully used to measure depression in college students (Garlow et al., 2008).

Anxiety Symptoms. The Beck Anxiety Inventory (BAI: Beck, Epstein, Brown, & Steer, 1988) is a 21-item measure of the prevalence of anxiety symptoms over a one-week period. Each item is rated on a four-point scale with a cut score of 26 or higher indicating severe anxiety. The BAI has demonstrated adequate psychometric properties when used with college students (Contreras, Fernandez, Alcarne, Ingram, & Vaccarino, 2004)

Overall Psychological Distress. The Outcomes Questionnaire-10 (OQ10: Lambert, Finch, Okiishi, & Burlingame, 2005) is a 10-item questionnaire designed to assess psychological distress and indicate the need for further assessment. The items are scored on a 5-point Likert scale with a total range of 0 to 40. Higher scores indicate more distress and the cutoff score for significant distress is 12. The OQ-10 has demonstrated adequate reliability and validity in college student samples (Lambert et al., 2005).

Symptoms and Assets Screening Scale (SASS). The SASS is a 34-item self-report measure that uses a 4-point scale to assess depressive symptoms, anxiety symptoms, substance problems, eating problems, well-being/assets, and impairment in college students (Downs et al., 2013). The well-being/assets subscale of the SASS has demonstrated adequate reliability and validity (Downs et al., 2013) and was used as a criterion measure in the current study.

RESULTS

An exploratory factor analysis (EFA) was performed on the five items that comprise the WHO-5 to examine the factor structure of the scale when used within a college student sample. The five items on the WHO-5 comprised a single factor with an eigenvalue of 3.26 that explained 65.19% of the variance, and the factor loadings for the five items ranged from .79 to .84. The WHO-5 demonstrated acceptable internal consistency ($\alpha = .86$) and test-retest reliability ($r = .77$) in the current sample. WHO-5 scores were significantly inversely correlated with the criterion measures of depression (-.70), anxiety (-.53), and psychological distress (-.73), and were significantly directly correlated with well-being/assets scores on the SASS (.65).

Receiver operating characteristic (ROC) curves were examined to evaluate the accuracy of the WHO-5 cut score of 12 or lower. This involved evaluating the measure's sensitivity, which is the rate at which WHO-5 scores of 12 or lower accurately identified participants who were reporting symptoms of depression and anxiety classified as severe by the PHQ-8 and BAI. We also calculated the measure's specificity, which is the rate at which WHO-5 scores of 13 or higher accurately identified participants who were not reporting severe symptoms of anxiety or depression. The WHO-5 accurately identified most participants who were reporting severe depressive symptoms with an area under the curve of 94% and the averaged cut scores of 11.5 and 12.5 resulting in sensitivities of 96%/96% and specificities of 80%/75%. The ROC curve for WHO-5 and BAI scores yielded an area under the curve of 85% and averaged sensitivities of 75%/80% and specificities of 82%/77%.

DISCUSSION

The purpose of this study was to evaluate whether the WHO-5 could be used to screen the college population to identify students experiencing clinically significant symptoms of depression and anxiety. The WHO-5 has been used for years as a depression screener in medical

settings around the world (Topp et al., 2015), but this study marks the first time the measure has been evaluated within a college student population. Our results suggest that the WHO-5 may provide a reliable and valid measure of well-being in college students and could potentially be used to identify a substantial proportion of those experiencing severe symptoms of depression and anxiety.

Specifically, the WHO-5 demonstrated good factor structure, internal consistency and test-retest reliability, and scores were significantly correlated with psychometrically-sound criterion measures of depressive symptoms, anxiety symptoms, overall distress, and well-being. Importantly, ROC curves revealed that WHO-5 scores showed fairly good sensitivity and specificity when used to identify students endorsing depressive and anxiety symptoms in the severe range (i.e., those at high risk and in clear need of further evaluation and/or treatment). Taken together, these results suggest that the WHO-5 is a potentially useful tool for identifying college students whose difficulties with symptoms of anxiety and/or depression are putting them at risk.

Limitations

This study was limited by a sample that was somewhat disproportionately white, young, and female compared to the overall student population at the two universities, thus limiting the ability to generalize the results with confidence. Though the WHO-5 has proven reliable and valid across diverse groups of medical patients around the globe (Topp et al., 2015), it will be important to also evaluate its psychometric properties in more diverse college student samples. In addition, though the WHO-5 has promise as a screener for college students, it is somewhat limited in that it has only been linked with anxiety and depression and not other mental health

issues such as eating disorders and substance abuse, which are also problematic and fairly prevalent on many college campuses.

CONCLUSION

Considering the high prevalence of mental health problems in the college student population and the numerous negative impacts on student academic performance, engagement, and well-being known to be associated with those problems (Baez, 2005; Miller & Chung, 2009), the time has come for colleges to seriously consider implementing population-based mental health screening to identify students at risk. The WHO-5 is a good option as a screener because it is brief, freely available, and could be easily scored and interpreted by a variety of student affairs professionals such as academic or extra-curricular advisors, residence life staff, or health center staff. Students could complete the WHO-5 online, be provided with feedback on their score and, if warranted, self-help resources and/or referrals to appropriate campus resources including perhaps campus mental health providers.

Of course, students who are having difficulties cannot be forced to access services or engage in self-help, but previous research has indicated that students provided such feedback and directions often do follow through and access resources (Kim et al., 2011). Besides the potential benefits to individual students' development, colleges would also likely benefit from improved retention, improved academic achievement, as well as a healthier and more vibrant and engaged campus community. Colleges that do not wish to conduct population-based screening could also use the WHO-5 in the context in which it was developed and simply administer it to students presenting at the health center with physical complaints, thus allowing for immediate follow-up as needed for those who screen positive.

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