Validation of the Brief Screen for Depression in a Jamaican Cohort

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ABSTRACT

Research on depression in Jamaicans has been limited by the absence of a psychometrically sound measure of depression. This project attempts to rectify this problem by exploring the concurrent and discriminant validity of the Brief Screen for Depression (BSD) using a sample of 244 students attending the University of the West Indies, Mona, Jamaica. Participants were administered the BSD along with the Beck Depression Inventory (BDI), the Center for Epidemiologic Studies Depression scale (CES-D), the University of California at Los Angeles (UCLA) Loneliness Scale – Revised, (UCLA-R) and the Responding Desirably on Attitudes and Opinions scale (RD16). Overall, the BSD was found to have an acceptable level of concurrent validity as evidenced by high correlations with scores on the BDI (0.64) and the CES-D (0.62), and an acceptable level of discriminant validity as demonstrated through moderate correlations with the UCLA Loneliness Scale (0.40). In addition, the BSD was found to possess a moderate degree of sensitivity in identifying individuals who may be experiencing clinically significant symptoms of depression.

Validación de la Prueba Breve para la Detección de la Depresión en una Cohorte Jamaicana

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RESUMEN

La investigación de la depresión en los jamaicanos ha estado limitada por la ausencia de mediciones de la depresión psicométricamente confiables. Este proyecto constituye un intento por corregir este problema, explorando la validez concurrente y discriminante de la prueba breve de la detección de la depresión conocida como BSD (Brief Screen for Depression). Para ello se recurrió a una muestra de 244 estudiantes que asisten a la Universidad de West Indies, Mona, Jamaica. A los participantes se les administró la prueba BSD, junto con el Inventario de Depresión de Beck (IDB), la Escala de Depresión del Centro de Estudios Epidemiológicos (CES-D), la Escala Revisada de Soledad de la Universidad de California en los Angeles (UCLA-R), y la llamada Escala de Respuesta Deseada sobre Actitudes y Opiniones (RD16). En general, se halló que la BSD tiene un nivel aceptable de validez concurrente tal como evidencian las altas correlaciones con las puntuaciones del IDB (0.64) y el CES-D (0.62), así como un nivel aceptable de validez discriminante, como lo demuestran las correlaciones moderadas con la Escala de Soledad de la UCLA (0.40). Además, se halló que la BSD posee un grado moderado de sensibilidad para identificar individuos que puedan estar experimentado síntomas de depresión clínicamente significativos.

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INTRODUCTION

Major depression ranked fourth in the world as the most important determinant of human disease in 1990 and is expected to rank second by the year 2020 (1). Much of the research on depression has been done with North American or European samples (2 – 5). Relatively little research on depression has been conducted using persons from the Caribbean. While the past research is valuable, Caribbean society, and in particular Jamaican society, is distinctly unique from that of European or North American cultures.

Like North American societies, a significant proportion of patients attending medical clinics in Jamaica have comorbid depression (6). However, unlike North America, the Jamaican primary healthcare system, which serves the ma-

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jority of the population, has more financial constraints which dictate inadequate staffing with large case loads. This overloading of the system tends to limit the patients' contact time with their healthcare professionals (7). As a result, patients' clinic visits may be restricted to issues surrounding the medical presenting complaint, thereby possibly missing other latent pathology such as issues of depression (8).

The presence of depression can complicate the medical management of patients, especially chronically ill patients. For this reason, it is important for physicians to detect and manage co-morbid depression (9). In order to facilitate the detection of depression in a time limited setting such as the primary care clinics in Jamaica, it would be ideal to first, validate a short self-reporting depression scale such as the Brief Scale for Depression (BSD) (10), which has been validated for depression elsewhere and which has cultural versatility (11) using a sample of the Jamaican population and then to validate this scale in a clinical sample of the same population. This study deals with the first step in that process. It is hypothesized that the BSD will achieve concurrent and discriminant validity in a sample of the Jamaican population. In accordance with past research outside the Caribbean (12–14), it is proposed that women within the sample will report more and stronger symptoms of depression than their male counterparts, depression scores for both males and females will increase with age, and age and gender will combine to accelerate age-related increases in depression among the women in the sample.

SUBJECTS AND METHODS

Sample

Students attending the University of the West Indies, Mona, Jamaica, were used to obtain preliminary evidence for the validity of the Brief Scale for Depression. In all, 244 participants (200 females, 32 males and 12 participants whose gender was not reported) took part in this brief study in September 2004. Participants ranged in age from 17 years to 49 years of age with a mean age of 22.7 years. Nearly half of all students were in their first year of studies (118 or 48.4%) while one-quarter of students were either in their second year (61 or 25%) or third year of studies (59 or 24.2%). The vast majority of the participants (214 or 87.7%) were enrolled in the Faculty of Social Sciences with the remaining participants (25 or 10.3%) enrolled in other faculties. Ethical approval for the study was obtained from the Head of Department of Sociology, Psychology and Social Work, who is responsible for the ethical review and approval of all research in the Department. The study was conducted following the guidelines established for research by the American Psychological Association. In particular, all respondents were asked to provide written informed consent prior to collection of data.

Measures

The Brief Screen for Depression (BSD) (10) is a short, easy to complete measure designed to screen non-psychiatric patients for symptoms of depression. It is specifically designed for use in general practice offices and clinics. The BSD consists of four simple to complete items, each of which assesses one set of depressive symptoms. Scores above 21 on the BSD indicate clinical levels of depression while those above 24 are used to distinguish patients with clinical levels of depression from those experiencing other psychiatric disorders. The BSD has been shown to correlate strongly with other measures of depression (15) and to have acceptable degrees of reliability (α = 0.63 to α = 0.65 15). Additionally, the BSD has been successfully applied in cultures outside of North America (11).

The Beck Depression Inventory (BDI) (16) was included in the current project to assess the concurrent validity of the BSD. It is a 21-item measure designed to assess the cognitive, behavioural, affective and somatic symptoms of depression. Participants were asked to record their responses to each item using a series of Guttman rank ordered statements. Statements were assigned a score of 0 to 3 depending on the severity of the symptom they described. Students were asked to circle the number associated with the statement that most accurately described their feelings. Depression scores are calculated by summing the numbers associated with the statements students circled. Previous research suggests that the BDI is reliable in North American samples of adults (16). Within this sample of adults, the BDI appears to have a reasonable degree of internal consistency reliability (α = 0.86).

The Center for Epidemiologic Studies Depression scale (CES-D) (17) is a 20-item measure of depressed mood. It was designed for use in general population surveys of depression, but has also found extensive use in clinical settings. While the CES-D assesses current depression, it places particular emphasis on the affective component of depression. The scale was created by combining items from other validated measures of depression. Past research suggests that the CES-D has a reasonable degree of internal consistency reliability (α = 0.85 for general populations and = α 0.90 for psychiatric groups) (15). The CES-D was used to establish the concurrent validity of the BSD.

The University of Los Angeles Loneliness Scale – Revised (UCLA-R) (18) is the most widely accepted and commonly used measure of loneliness. It is included in the battery of measures to provide evidence for the discriminant validity of the BSD. Loneliness is a similar but conceptually distinct phenomenon from depression. While all people who report strong feelings of loneliness may report many symptoms of depression not all those who score highly on measures of depression report that they are socially isolated

or are lonely. Indeed, past research (18) has used measures of depression to gather evidence for the validity of measures of loneliness. Thus, the UCLA-R is expected to have a moderate but not strong correlation with scores on the BSD.

The UCLA-R consists of 20 statements regarding perceptions of social relationships and feelings of belonging. Half of the items are phrased to express positive perceptions of social belonging while the other half are phrased to express perceptions of a lack of social and emotional intimacy with others. The UCLA-R has been administered in several different cultural contexts and countries such as Iran, Zimbabwe, Puerto Rico, Cape Verde, Portugal, Taiwan and Greece (19 – 23). The measure has been found to have high levels of concurrent and discriminant validity and high levels of internal consistency reliability ($\alpha = 0.94$; 15).

The Responding Desirably on Attitudes and Opinions Scale (RD-16; 24) is a brief measure of response desirability designed for use with the general public. It consists of a series of statements describing socially appropriate opinions or attitudes (*I find that I can help others in many ways*). The measure has been found to have acceptable degrees of internal consistency reliability in both USA and German samples (25). The RD-16 is used to collect evidence of the discriminant validity of the BSD. It is expected that the RD-16 should have moderate to low correlations with the BSD.

Procedure

One of the investigators provided a brief introduction of the project at the start of one of the participants' regular academic lectures. The project was described as establishing the reliability and validity of several measures of mood and social relationships. Participants were informed that their participation was completely voluntary and they could withdraw from the project at any time. Questionnaires were then distributed for completion. Completed questionnaires were returned to one of the investigators at the end of the lecture.

A two-stage approach was used to establish the reliability and validity of the BSD. First, the internal consistency reliability of the BSD was examined using Chronbach's α coefficient (26). Following this, the concurrent and discriminant validity of the BSD were examined using Pearson's product moment correlations. Further, the sensitivity of the BSD for detecting depression was examined by comparing its results with those of the BDI.

RESULTS

The BSD was found to have an acceptable degree of internal consistency reliability ($\alpha = 0.75$). Additionally, the UCLA-R, CES-D and the BDI were also found to have high levels of internal consistency ($\alpha = 0.86$, 0.86 and 0.86 respectively). However, the internal consistency reliability of the RD-16 was slightly lower than expected ($\alpha = 0.58$). As such, the RD-16 was not used to obtain evidence of discriminant validity.

Overall, results of the validity analyses suggest that the BSD has an acceptable degree of concurrent and discriminant validity (Table 1). Scores on the BSD correlated (0.64) with the BDI and (0.62) with the CES-D, suggesting that the BSD has a moderate degree of concurrent validity. In contrast, scores on the BSD correlated (0.40) with scores on the UCLA-R suggesting the BSD has an acceptable degree of discriminant validity. This pattern of scores suggests that the majority of the stable variance underlying the BSD assesses depression (38% to 41%) while only a small degree of the variability (16%) measures a conceptually similar but distinct concept.

Table 1: Correlation matrix for the brief screen for depression (BSD) and other measures.

	BSD	BDI	CES-D	UCLA-R
BSD	1.00			
BDI	0.64	1.00		
CES-D	0.62	0.65	1.00	
UCLA-R	0.40	0.42	0.51	1.00

The BSD also appears to have good sensitivity. Using the cut-off scores for clinical depression on the BSD and those for moderate to severe depression on the BDI, the BSD correctly classified 71% of all participants (Table 2) into normal or depressed groups. The BSD also appeared to generate a low rate of false negative scores. Only four or 2.5% of all 163 participants classed by the BSD as normal were classified by the BDI as being clinically depressed. However, 67 or 82.7% of all 81 participants classified by the BSD as depressed were classed as normal by the BDI.

Table 2: Comparison of depression groupings generated by the Beck Depression Inventory and the brief screen for depression.

BSD Classification	BDI Classification		Total
	Depressed	Normal	
Depressed	14	67	81
Normal	4	159	163
Total	**18**	**226**	**244**

No gender differences in depression were found for the BSD ($t_{(230)} = 0.82$, $p > 0.05$). Younger participants had slightly higher BSD depression scores than older participants

Table 3: Age differences in depression scores by measure.

Age Group	BSD	BDI	CES-D
17 years to 23 years			
Mean	18.72	7.75	16.31
SD	8.00	6.81	9.50
24 years to 49 years			
Mean	16.49	6.08	12.70
SD	8.54	4.90	8.21

(Table 3; $t_{(232)} = 1.84$, $p > 0.05$) though this trend was not statistically significant.

DISCUSSION

The BSD was found to have an acceptable level of concurrent and discriminant validity in this population of respondents. It also had an acceptable level of internal consistency reliability. Finally, the BSD has a high degree of sensitivity but less selectivity specificity as indicated in Table 2. This relatively high level of false positive scores is expected as the BSD is designed to capture many potential cases of depression for further assessment by clinicians.

The psychometric properties of the BSD suggest that it may provide a quick, valid and sensitive screen for depression among Jamaican university students, and possibly other sub-populations of Jamaican citizens. The evidence for its utility is particularly strong given the selection of measures used in this project. Depression has both affective and cognitive manifestations, with the affective symptoms appearing in the earlier stages of the illness while the cognitive symptoms appear later (27). This project included both measures of the cognitive manifestation of depression (the BDI) and the affective symptoms of depression (the CES-D). The BSD correlated strongly with both the BDI and the CES-D. This consistency across different approaches to the assessment of depression suggests that the BSD may be useful in screening for patients presenting with either cognitive or affective symptoms, as well as screening for those in the earlier or later stages of depression.

This study may also be interpreted as producing suggestive evidence for the concurrent validity of the BDI and the CES-D as measures of depression among Jamaican university students. These measures correlated strongly with each other as well as the BSD. In addition, the BDI moderately correlated with the UCLA-R Loneliness Scale ($r = 0.42$), providing support for the discriminant validity of the BDI. Evidence for the discriminant validity of the CES-D, however, is weaker due to the larger correlation of CES-D scores with scores on the UCLA-R Loneliness scale ($r = 0.51$).

As both the BSD and the BDI appear to have acceptable degrees of concurrent and discriminant validity, the question arises "Which measure is better used as depression screener?" Inspection of Table 2 clearly indicates that the BSD may function better as a screen for depression as it identifies far more instances of depression than the BDI, suggesting that the BSD has superior sensitivity, but lower specificity. High sensitivity is a particularly desirable property of a screening instrument as few true cases of depression will be missed.

No gender difference in BSD depression scores was found. One possible explanation for the absence of an effect concerns the small number of males in the sample (n = 27). Consequently, the analyses of gender differences had low statistical power ($\beta = 0.005$). Based on the size of this sample, the interactive effects of gender and other demographic variables on BDI depression scores cannot be examined.

Younger participants had higher mean depression scores on the BSD than did older participants. This pattern of higher depression scores for younger participants was seen on the BDI and the CES-D (Table 3), although these differences were statistically non-significant. Thus, it appears that higher levels of depression may be a general phenomenon among younger Jamaican university students rather than an anomaly of the BSD. Future research will explore in greater detail age differences in depression, as well as the role that employment status, gender and occupation may play in levels of depression.

One limitation of the current project is the use of university students as a sample. While students at the UWI represent a wider range of ages and a different gender distribution than in North American universities, this population is still not representative of the Jamaican populace. Further, this sample is not completely representative of the overall population of UWI students. At UWI, Mona, 28% of all students are male (UWI Statistics 2002/2003, 2004), while in this study sample only 14% were male. Students enrolled in the Faculty of Social Sciences make up 37% of all students at UWI, Mona, whereas in the study, 88% were enrolled in Social Sciences. Despite these limitations, the current study provides some preliminary evidence for the concurrent and discriminant validity of the BSD. Based on the current sample and pattern of findings, the BSD may be useful in screening post-secondary school students for depression.

A second limitation was that the reliability of the RD-16 was slightly lower than expected ($\alpha = 0.58$). As such, the RD-16 was not used to obtain evidence of discriminant validity. It is possible that the extreme wording used in the RD-16 to express socially desirable forms of behaviour was not viewed by Jamaican students as an extreme expression. Cultural insiders report that Jamaicans use words such as "never" and "always" in a less definite manner. As such, never and always may be interpreted as "sometimes" or "most of the time" within this sample of Jamaican students. This cultural tendency suggests that measures of social desirability may only partially capture the tendency to respond in socially appropriate ways.

The authors plan to examine the psychometric properties of the BSD using broader and more representative samples of the Jamaican population. Once the BSD has been found to be valid and reliable in such samples, it may be included in large scale studies requiring a brief, but valid measure of depression such as epidemiological surveys.

Given its short format, the BSD also may be particularly valuable to physicians who wish to screen their patients for depression. To facilitate its use in these settings, future research should explore the psychometric properties of the BSD in a general clinic population.

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