



The Sensitivity of Two Common Depression Measures in a Hispanic Young Adult Sample

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Abstract

Clinicians and researchers alike benefit from the use of valid measures of depression. Exploring the sensitivity of commonly available measures in underserved ethnocultural groups enhances the generalizability of them. Two specific measures are the PRIME-MD depression measure (Spitzer et al., 1994) and the Center for Epidemiological Studies-Depression (CES-D) measure (Radloff, 1977). For the purposes of this study, the more concise though still reliable (c.f. Carpenter et al., 1998) 'Boston' 10 item CES-D was tested in tandem with the 9 item PRIME-MD measure, which has also been used in a study of Hispanic primary care patients (Robison, Gruman, Gaztambide, & Blank, 2002). The present study investigated which measure may be more sensitive to self reported depressive sensitivity (defined as having reported a previous depressive episode) in a Hispanic young adult sample.

Participants ($n = 445$) completed both the PRIME-MD and CES-D measures in addition to reporting their past history of having ever been diagnosed with depression. Multiple Indicator-Multiple Causes modeling with Mplus was used with the latent depressive symptom factors from the two depression measures predicting the criterion diagnosis reports. After accounting for the significant relationships between items within and between the two measures, an acceptably fitting model was specified ($\chi^2(43) = 58.96, p = .06, CFI = .90, TLI = .97, RMSEA = .04, WRMR = .50$) confirming the factor structure of the measures and their sensitivity to the criterion of depression susceptibility (i.e., a previous depression diagnosis). Only the CES-D was sensitive to reported depression susceptibility in this sample ($\gamma = .85(.29), p < .01$); PRIME-MD latent factor scores were not predictive of reported depression diagnosis ($p > .20$). First, it could be that the PRIME-MD is simply not sensitive to a diagnosable level of depression in Hispanic young adults, while consistent with other studies, the CES-D measure is sensitive in this population (Grzywacz, Hovey, Seligman, Arcury, & Quandt, 2006). Alternatively, the CES-D could be a more sensitive measure of more stable aspects of depression that are more long-standing for individuals already diagnosed, while the PRIME-MD may be more sensitive to the more acute aspects of depression in Hispanics (e.g., Robison et al., 2002). Thus, the CES-D appears suitable for clinicians and researchers working with primarily Hispanic populations.

Introduction

The rates of major depression in the United States have increased from 1992 to 2002 from 3.33% to 7.06% among adults (Compton, Conway, Stinson, & Bridget, 2006). Although Hispanics as a group do not exhibit higher rates of depression (Compton, Conway, Stinson, & Bridget, 2006), some studies have documented that recent female immigrants (e.g., from Mexico) may exhibit higher rates of depressive symptoms due to higher levels of stress associated with the adaptive process (Vega, Kolody, Valle, & Hough, 1986). Given non-trivial rates of depression in this population and the importance of objective assessment tools to support diagnoses (Radloff, 1991), identifying reasonable measures of depressive symptomatology that are particularly sensitive within an ethnocultural minority group (Crockett, Randall, Shen, Russell & Driscoll, 2005) is critical.

CES-D
The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) was designed as an epidemiological measure to assess current levels of depression in the general population. The measure considers 4 factors: depressed affect, positive affect, somatic and retarded activity, and interpersonal relationships. Still, it should be noted that this measure is not considered a clinical tool for diagnosing depression. For Hispanics, the four factors of depression may not be as cohesive however (Guarnaccia, Angel, & Worobey, 1989) such that Hispanic samples might report depressive symptoms in a different way compared to other ethnic groups (Posner, Stewart, Marin, & Pérez-Stable, 2001). Finally, a more brief, 10-item 'Boston' version of the CES-D was developed which shows acceptable reliability and is reported to be suitable for measuring depressive symptomatology in Hispanics (Grzywacz, Hovey, Seligman, Arcury, & Quandt, 2006).

PRIME-MD
The Primary Care Evaluation of Mental Disorders-Depression Scale was created in order to provide a quick procedure for diagnosing mental disorders by primary care physicians (Spitzer, Williams, Kroenke, Linzer, Verloin deGruy, Hahn, Brody, & Johnson, 1994). The Patient Health Questionnaire (PHQ-9) is a shortened version of the original PRIME-MD which consists of 9 questions asking about the presence of depressive symptoms during the past two weeks, as well as an item addressing the impact of these symptoms on daily life (Huang, Chung, Kroenke, Delucchi, & Spitzer, 2005). The PHQ-9 showed single factor invariance when tested in multiple ethnic groups (Huang, Chung, Kroenke, Delucchi, & Spitzer, 2005). As a result, the PRIME-MD appears to be a stable measure of clinical depression for multiple ethnic groups including Hispanics.

Finally, one interesting application of these measures may be their ability to detect susceptibility to future depressive episodes. Under the stress generation hypothesis (Hammen, 2006), previous bio-psycho-social stressors serve to predispose an individual to depression. Biologically, individuals who have had previous life stressors (e.g., depression), may be at risk for the development of future affective disorders (Post, 1992). Those who have had a previous depressive episode are also at an increased risk of developing future depressive symptomatology (Nyklíček & Pop, 2005). Still, limited information is known as to whether instruments such as the PRIME-MD and CES-D can be utilized to address susceptibility to future depression in Hispanic populations.

Study Aims

The present study analyzed the sensitivity of two depression scales in Hispanic young adults and which of the two may be most apt to capture depression susceptibility as a function of previous depression diagnosis.

Hypothesis

Depression susceptibility in Hispanics will be better predicted by the CES-D screening measure, as the current sample is not clinical in nature.

Methods

Participants
Five hundred fifteen Introduction to Psychology students at the University of Texas El Paso were recruited through Experimatrix and given credit for participation. The Hispanic subsample ($n = 445$) was used for subsequent analyses.

Measures
Typical sociodemographic information including ethnicity, education level, income were gathered.

Depression Susceptibility was measured via self-report of participants to a question indicating past mental health history/treatment of depression.

The Short Acculturation Scale for Hispanics (SASH) assessed level of acculturation to U.S. culture (Marin, Sabogal, VanOss, Otero-Sabogal, & Pérez-Stable, 1987). This instrument has been found to have high internal reliability ($\alpha = .92$; Marin et al., 1987), and internal reliability was also found to be high for this study ($\alpha = .86$). Mean item scores are used for purposes of analyses and can range from one (indicating less acculturation) to five (indicating greater acculturation).

The Primary Care Evaluation of Mental Disorders (PRIME-MD; Spitzer et al., 1994) assessed depressive symptomatology (Spitzer et al., 1994). This measure has been found to be consistent with diagnoses made independently by mental health professionals ($\kappa = .71$; Spitzer et al., 1994). Items are rated on a four-point Likert-type scale, and scores are obtained by summing item scores which range from 0 to 27 (higher scores indicating more depressive symptoms). However, in this study the PHQ-9 version was used, a 9-item brief measure, which demonstrates reliability with a coefficient α of .89 (Kroenke, Spitzer, & Williams, 2001).

The Center for Epidemiological Studies – Depression Scale (CES-D; Radloff, 1977). This scale that was developed as an assessment measure of depressive symptomatology in the general population (Radloff, 1977). Response options range from 0 ('rarely') to 3 ('most of the time'). Summed scores represent a continuous measure of depressive symptomatology. Coefficient α 's generally range from .80 to .90 in the general population (e.g., Grzywacz, Hovey, Seligman, Arcury, & Quandt, 2006; Hovey, 2000) and, specific to Mexican American samples, similarly high internal reliabilities (α) of $> .80$ (e.g., Heilemann, Coffey-Love, & Frutos, 2004; Hiott, Grzywacz, Arcury, & Quandt, 2006). In this study, the reliable 10-item 'Boston' alternative version to the 20-item scale was used (Carpenter, Hall, Rayens, Sachs, and Cunningham, 1998).

Approach to Analysis
Because prior depression diagnosis was dichotomous, Mplus 5.1 with the WLSMV estimator and Θ parameterization was used. The β estimates between past depression diagnosis and the ten item PRIME-MD as well as the CES-D were freed simultaneously to examine which may better predict depression symptomatology based on a known group of Hispanics susceptible to depression. In order to improve model fit in the measurement model between two measures of the same construct (depression), Θ covariances with derivatives above .08 were freed among the depression items included in the model. Figure 1 presents the model with unstandardized estimates and standard errors where space permitted. Theta covariance is not shown due to space constraints but are available upon request.

Results

Demographics.
Because participants ($n = 445$) were Hispanic college students, the sample was comprised predominantly of young adults ($MAge = 20.06, SD = 3.98$), the majority of whom were females (59%). Participants were also slightly more acculturated rather than less acculturated ($M\ SASH\ Acculturation = 3.27, SD = .77$). A total of 4% of the sample reported a previous diagnosis of depression. The observed mean score for the PRIME-MD was 8.29 ($SD = 5.83$) and for the CES-D 10 item measure, the mean was 14.47 ($SD = 9.33$). Exact median tests comparing those susceptible to depression and those not previously diagnosed indicated that the CES-D observed scores were differential based on susceptibility to depression, $\chi^2(1) = 3.68, exact\ p = .05$. For the PRIME-MD however, the exact median test indicated that there was limited differentiation as a function of previous depression diagnosis (i.e., susceptibility to future depression), $\chi^2(1) = .14, exact\ p = .46$.

Measurement and Structural Models.
As can be seen in Figure 1, susceptibility to future depression was positively predicted by latent scores on the CES-D, $\beta = 1.39$ ($std.\ error = .37$), $p < .001$. Noteworthy also is that PRIME-MD scores were negatively predictive of susceptibility to future depression, $\beta = -1.52$ ($std.\ error = .62$), $p < .05$. To better understand the distribution of scores for both depression measures as a function of susceptibility to depression, ROC curves (AUCs) corroborated the ability of the CES-D to capture susceptibility to depression to a greater extent than the PRIME-MD: The AUC for the CES-D (71%) was greater than the AUC for the PRIME-MD (59%) and this difference in predictive validity was significant, $\chi^2(1) = 4.42, p < .05$. The AUC graph is presented in Figure 2.

Figure 1: PRIME-MD and CES-D Prediction of Depression Susceptibility in Hispanics

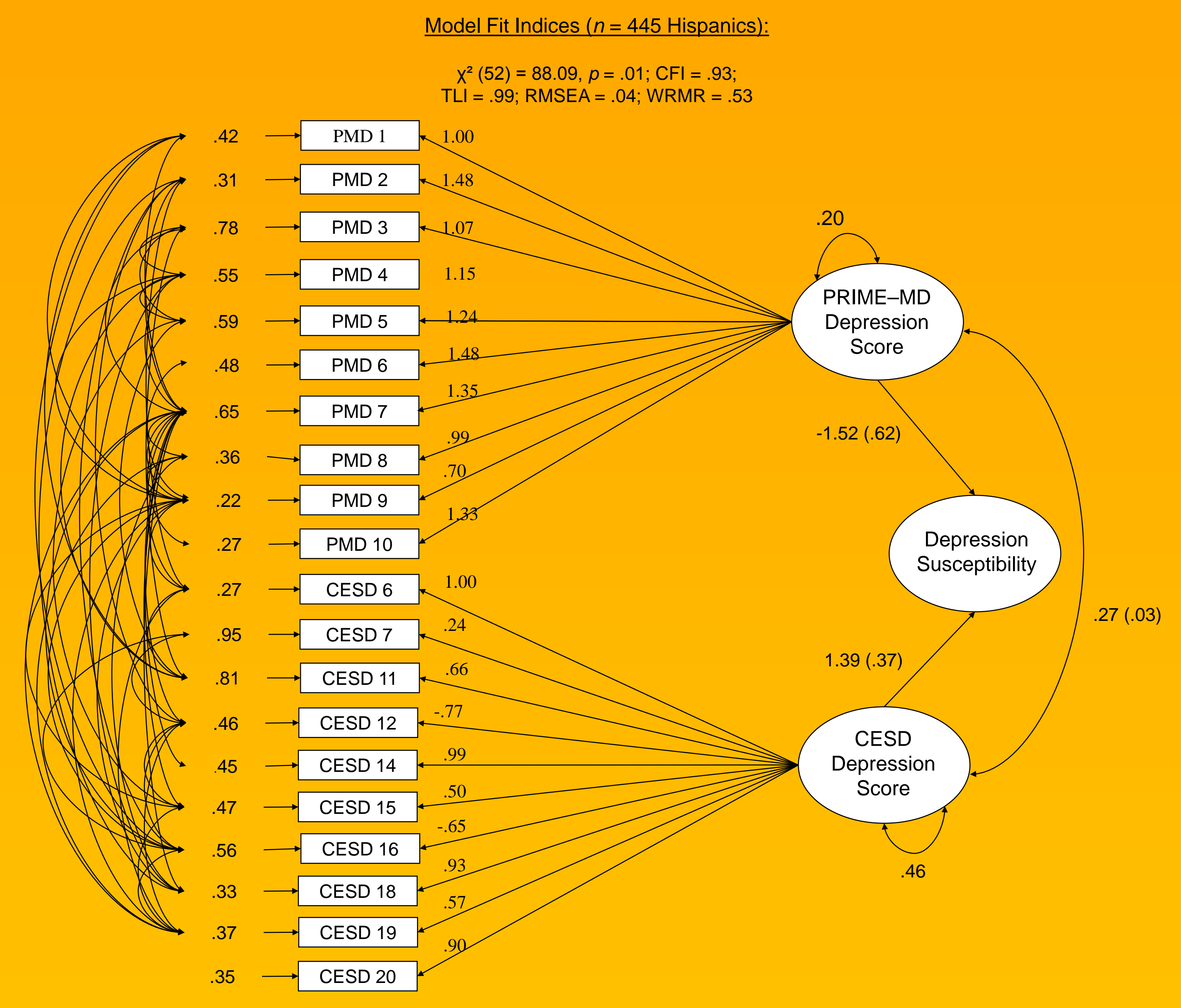
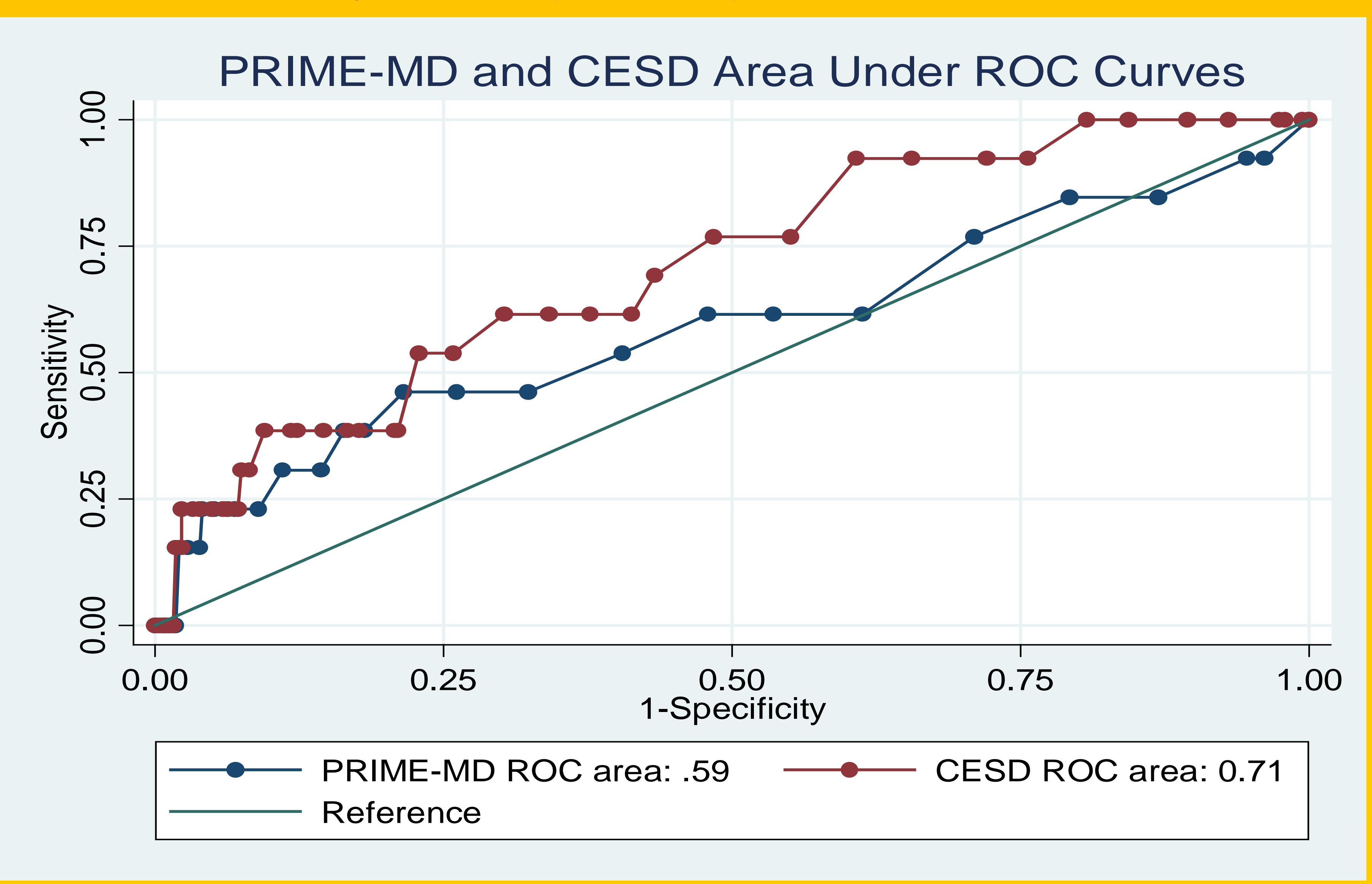


Figure 2: Sensitivity and Specificity of PRIME-MD and CES-D



Discussion

The CES-D appears to be a useful measure of depression in Hispanic populations. This has been suggested in several studies that have previously assessed depressive symptomatology using the CES-D with diverse Hispanic samples of different age, and of different subethnic groups (Grzywacz, Hovey, Seligman, Arcury, & Quandt, 2006; Guarnaccia, Angel, & Worobey, 1989; Posner, Stewart, Marin, & Perez-Stable, 2001).

The use of the PRIME-MD in this sample is questionable for non-clinical purposes since it does not tend to capture lower levels of depression (Spitzer, Williams, Kroenke, Linzer, Verloin deGruy, Hahn, Brody, and Johnson, 1994). However, the PRIME-MD might be useful in measuring acute levels of depression (Spitzer, Williams, Kroenke, Linzer, Verloin deGruy, Hahn, Brody, & Johnson, 1994), in which case this study may offer support for the discriminative validity of the PRIME-MD. In short, the PRIME-MD might still be useful for Hispanic young adults presenting in clinical settings with acute symptomatology. However, for the broader community, it may not be as functional as the epidemiologically oriented CES-D.

In terms of susceptibility to future depression in Hispanics, the CES-D performs better than the PRIME-MD at tapping what may be either: 1) residual symptoms of depression experienced by those who have had a previous depressive episode, or 2) the development of impairment which may put an individual at risk for a future depressive episode (Hammen, 2006).

Importantly, effective and timely detection of depressive symptoms reaching the level of clinical impairment is critical for treating depression in the general population (Alexander, 2007). While the ability to distinguish those more susceptible to future depression from those less susceptible to future depression was far from perfect, the CES-D '10' item screening questionnaire may still be an appropriate choice for a depression measure for the general population of Hispanics.

With regard to the risk adolescents face for subsequent depressive episodes when transitioning to adulthood (e.g., Hammen et al., 2008) and given the young adult sample of the present study, the '10' item CES-D may be more optimal than the PRIME-MD measure in community samples of Hispanics.

Limitations
Nature of depressive episode was not fully described and only a gross indicator of future susceptibility to depression, and the utility of the PRIME-MD and CES-D may be different depending on symptom severity and clinical sub-types of unipolar depression. Considering those with unipolar depression with comorbid psychiatric diagnosis is also warranted within the Hispanic population.

Future directions
The expression of depressive symptoms may not be uniform across Latin American cultural groups (Posner, Stewart, Marin, & Pérez-Stable, 2001), and an understanding of the performance of depression measures in these subcultures is warranted. Furthermore, this study focused on high functioning individuals in college. However, it may be that for Hispanics in the general population (e.g., potentially greater symptom severity, comorbidities), the observed sensitivity patterns of the CES-D and the PRIME-MD may not be generalizable. To that end, analysis of multiple depression measures simultaneously in the general population of Hispanics will meaningfully extend the results of this study.

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