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Psychometric properties of the social phobia and social interaction anxiety scales: Evidence of construct equivalence in an African American sample

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ABSTRACT

This study evaluated the psychometric properties of the Social Phobia Scale and Social Interaction Anxiety scale in a community sample of African Americans. We conducted a confirmatory factor analysis of the combined scales comparing the data to 2- and 3-factor solutions commonly reported in the literature. The results indicated that neither solution produce an adequate fit to the data in this study. We then proceeded to conduct an exploratory factor analysis within a confirmatory framework of both scales. While we were able to extract a 2-factor solution from the data, the item composition of the factors was somewhat different for African Americans than what is typically reported in non-Hispanic White samples. While we conclude that use of the two social anxiety scales is warranted, we make recommendations regarding the interpretation of both scales with African Americans.

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1. Introduction

Psychology has recently recognized the necessity of examining the concepts of race, ethnicity, and culture (Bernal & Castro, 1994; Carter, Sbrocco, & Carter, 1996; Carter, Mitchell, & Sbroco, 2012) in the measurement of psychopathology (Chapman, Williams, Mast & Woodruff-Borden, 2009b). While there is mounting evidence that ethnicity may be an important moderator variable that may account for differences in the expression of psychopathology (Carter et al., 1996; Okazaki, 1997) and its epidemiology (Brown, Eaton, & Sussman, 1990), there have been few investigations examining the psychometric properties of common pathological indices among African Americans (Carter et al., 2005). This study sought to add to the extant literature by examining the psychometric properties of social anxiety measures in an African American sample. Previous research has indicated that African Americans may exhibit signs of anxiety that are not common among their non-Hispanic White counterparts; most notably isolated sleep paralysis (Bell et al., 1984) and an increased propensity to experience numbness and tingling sensations (Smith, Friedman, & Nevid, 1999). The presence of differing symptoms may suggest the underlying structure of anxiety is different as well. Additionally, there is evidence that measurement of specific variants of anxiety (e.g., worry, anxiety sensitivity, phobia, and to some extent social anxiety) differs between African Americans and Non-Hispanic Whites (Carter, Miller, Sbrocco, Suchday, and Lewis, 1999). For these reasons, then, it is imperative that we begin to gain an understanding of the nature of anxiety and the validity of key concepts such as social anxiety among African Americans.

1.1. Anxiety measurement among African Americans

There is evidence that the measurement of anxiety among African Americans may differ from that which is commonly found for Non-Hispanic Whites. For example, Carter et al. (1999) examined the factor structure of the Anxiety Sensitivity Index (ASI) among African Americans. Through confirmatory factor analysis (CFA) they found that the typical factor structure found for Non-Hispanic Whites did not provide an adequate fit to the data for African Americans.

Conversely, Arnau, Broman-Faulks, Green, and Berman (2009) examined the factor structure of the revised ASI in African American and Non-Hispanic White participants. They proposed a hierarchical measurement structure with four first-order factors loading onto a higher second-order anxiety sensitivity factor. With CFA, they found consistency in the global fit among the two groups: the number of factors, first order factor pattern, and second order factor

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patterns were invariant based on the goodness-of-fit indices. However, local variances were discovered at the residual level for three of the four first-order factors (fear of respiratory symptoms, fear of publicly observable anxiety reactions, and fear of cardiovascular symptoms). That is, variances that were not accounted for by the second-order factor. These findings entailed that while the two groups could be compared validly based on the consistency in factor structure and patterns, local variances within the three factors could introduce more nuanced differences.

Chapman, Kertz, Zurlage and Woodruff-Borden (2008) conducted a confirmatory factor analysis of the Fear Survey Schedule, second edition (FSS-II) in a sample of African American and Non-Hispanic White young adults. While both groups yielded factors of social anxiety on the FSS-II, the content of the factors differed between groups. Among Non-Hispanic Whites social anxiety was comprised of self-consciousness, being criticized, and looking foolish among Non-Hispanic Whites, while among African Americans social anxiety also included not being a success.

Overall, the evidence of psychometric differences based on ethnicity is mixed. Some studies have found clear evidence of differences in anxiety between African Americans and Non-Hispanic Whites (e.g., Carter et al., 1999) while others have found some consistency between African Americans and Non-Hispanic Whites (e.g., Chapman, Kertz, & Woodruff-Borden, 2009; Chapman et al., 2009b). This suggests that measures of anxious pathology associated with specific disorders (e.g. anxiety sensitivity and panic disorder) may be reported differently by African Americans. While there is evidence of cross-ethnic variability in the measurement of certain types of anxiety, it does not imply that all types of anxiety would exhibit comparable cultural variability. However, if multiple types of anxiety show comparable variability, it may imply that the overarching construct of anxiety differs ethnically. As such, evaluating measures of social anxiety among African Americans could represent a next step. If there is consistency in the noted differences in various measures, the meaning of anxiety among African Americans may become clearer. In our investigation of social anxiety we found inconsistencies between African Americans and non-Hispanic Whites.

1.2. African Americans and Social Anxiety

With respect to social anxiety, Hambrick, Rodebaugh, Balsis, Mendez, and Heimberg (2010) conducted the only study examining the ethnic equivalence of the Social Interaction Anxiety Scale (SIAS) among African Americans. The authors administered the SIAS and measures of depression and worry to a sample of African American, Caucasian, and Asian Americans. It was initially found that the factor structure of the SIAS was comparable across groups. To test for measurement bias, they used the technique of differential item analyses within an item response theoretical framework. This psychometric approach could yield two parameters of bias: a discrimination parameter that indicates how strongly a scale item is related to its underlying latent construct (e.g. social interaction anxiety), and a threshold parameter that represents the point in the range of the latent variable with equal probability of two responses within an item scale (e.g. two rating on a Likert scale). In the context of group comparison, statistically significant difference in the discrimination parameter entails that the ability to measure the latent construct is stronger for one group over the other. With respect to SIAS, the authors found significant differences for the two parameters among the samples of African American and Caucasian. Specifically, three of its items differentiated less effectively among African Americans (i.e. the discrimination parameter was lower). Moreover, most items on the scale showed statistically significant difference in their threshold, with African Americans having a higher probability of endorsing more pathological response options than Caucasians. As such, the authors concluded that use of the SIAS might lead to biased conclusions, especially in cross-ethnic comparisons (e.g. analogous mean cut-off scores), and that these differences in item functioning and levels of latent construct warrant further research. It should be noted that the sample was drawn from an undergraduate populations and participants self-reported their ethnicity. It is possible that somewhat different results would be found with a community sample.

Melka, Lancaster, Adams, Howarth, and Rodriguez (2010) conducted a confirmatory factor analysis of the fear of negative evaluation (FNE) and social avoidance and distress (SAD) scales in samples of African American and Non-Hispanic White undergraduate students. These researchers found that Non-Hispanic Whites scored higher on the FNE than African Americans while African Americans scored higher on the SAD than Non-Hispanic Whites. Multiple group analyses indicated significant differences in the factor structure of both measures between groups. Single confirmatory factor analyses (CFA) of the FNE indicated that the original factor structure did not fit the data for the Non-Hispanic White or African Americans. For Non-Hispanic Whites one item was removed and for African Americans, five items were removed from the FNE to adequately improve the model fit of the FNE. Results from the CFA for Non-Hispanic Whites on the SAD indicated an adequate fit to the original factor structure. The CFA for African Americans indicated that two items did not adequately load on the single factor model tested. With the aforementioned corrections to each scale, Non-Hispanic Whites continued to score higher than African Americans on the FNE and the comparison between African Americans and Non-Hispanic Whites mean scores on the SAD approached significance. The authors note that the removed items for the African American sample may suggest that those items are irrelevant or represent a separate construct.

Most recently, Beard, Rodriguez, Moitra, and colleagues (2011) reported on the psychometric properties of the Liebowitz Social Anxiety Scale (LSAS) among African American participants diagnosed with a variety of anxiety disorders. In addition to finding that scores on the fear and avoidance subscale were redundant, the authors compared the fit of their sample with 2-, 4- and 5-factor models and reported that each model was a poor fit with the data although the 4-factor model was the best fit of those tested. This study is somewhat difficult to interpret however, given the moderate sample size ($n = 97$) and the diagnostic heterogeneity of the sample. While use of a clinical sample is unique and represents an advantage in this study, it is quite possible that a diagnostically homogenous socially anxious sample would produce a different factor structure. Nonetheless, this study further highlights the need for continued exploration of the psychometric properties of similar measures of social anxiety.

1.3. Social Phobia Scale (SPS) and Social Interaction Anxiety Scale (SIAS)

The Social Phobia Scale (SPS) and the Social Interaction Anxiety Scale (SIAS) developed by Mattick and Clarke (1998) are widely used measures of social anxiety and have demonstrated adequate reliability and validity across a number of studies with Non-Hispanic White samples. The SPS was designed to assess fear of performing tasks in the presence of others, while the SIAS was designed to measure anxiety related to interactions with others. Typically, the SPS is found to be a two-factor measure while the SIAS is found to be unidimensional. Safren, Turk, and Heimberg (1998) evaluated the joint factor structure of the SPS and SIAS. As might be expected, a confirmatory factor analysis indicated that the combined items failed to fit a single factor solution. A follow-up exploratory factor analysis indicated the presence of 3 factors (interaction anxiety, anxiety about being observed by others, and

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