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The Factor Structure of the Anxiety Sensitivity Index among Northern Plains Native Americans

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Abstract

Within our current research climate, an emphasis has been placed on examining the cross-cultural applicability of psychological tools and exploring their utility with people of different backgrounds. Within this line of investigation lies the risk of classifying people too broadly and masking important regional, tribal, or dialectical differences. This may be particularly potent among Native Americans, given the number of distinct indigenous entities. This study examined the psychometric characteristics of the Anxiety Sensitivity Index with a tribally homogeneous sample, as compared to previous tribally heterogeneous and majority culture findings. Results suggested that data from a homogeneous Native American sample poorly fit factor solutions reported from heterogeneous Native American and Caucasian samples, and favored a unifactorial solution. Implications for assessment with Native American peoples are discussed.

Keywords: Native American, anxiety sensitivity, cross-cultural validity

1. Introduction

American Indians have been reported to be one of the fastest-growing minority populations, from 1.4 million in 1980 to almost 2.5 million (US Bureau of Census, 2001). Given this shift in the North American cultural demographic, the probability of encountering American Indian clients in clinical practice is high. Consequently, there has been growing recognition of the need for more culturally appropriate psychological methods. Despite this, little psychometric research has examined psychological methods with American Indians (Beals, Manson, Keane, & Dick, 1991; Davis, Hoffman, & Nelson, 1990; Malgady, 1996).

The paucity of assessment tools validated with Native American populations is distressing, given that psychological disturbances are a widespread problem among Native Americans (Dick, Manson, & Beals, 1993). Some studies suggest that as many as 40–50% of Native Americans have experienced an emotional disorder (Beiser & Attneave, 1982; Mason, Tatum, & Dinges, 1982), with anxiety, substance abuse, and depression being most prevalent (Maser & Dinges, 1993; Nelson, McCoy, Stetter, & Vanderwagen, 1992; Walker, Lambert, Walker, & Kivlahan, 1993). Although the high rate of psychopathology among Native Americans is poorly understood (McNeil, Porter, Zvolensky, Chaney, & Kee, 2000), many authors implicate acculturation-related distress (Duran & Duran, 1995; McDonald, Jackson, & McDonald, 1991).

In an initial effort to evaluate the cultural validity of commonly used psychological measures, Zvolensky, McNeil, Porter, and Stewart (2001) explored the factor structure of the Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1992) with a diverse sample of 282 American Indian and Alaska Native students attending Haskell Indian Nations University. The ASI is a 16-item measure of the anxiety sensitivity (AS) construct, the fear of anxiety symptoms arising from the belief that they will have harmful social, somatic, and/or psychological consequences (Reiss & McNally, 1985; Reiss, Peterson, Gursky, & McNally, 1986). Numerous studies suggest that AS is an etiological risk factor for a number of psychological conditions including panic disorder (Schmidt, Lerew, & Jackson, 1997, 1999), other anxiety disorders and depression (e.g., Taylor, Koch, Woody, & McLean, 1996), and substance abuse (Stewart, Samoluk, & MacDonald, 1999). Given the high prevalence of such disorders among Native American populations, understanding etiological risk factors as they relate to Native Americans is of paramount importance.

Zvolensky et al. found support for a three-factor hierarchical structure to the ASI, with factors representing physical concerns, psychological concerns, and social concerns loading onto a higher-order global AS factor. This three-factor structure was nearly identical to that found using a predominantly Caucasian Canadian sample (Stewart, Taylor, & Baker, 1997), although both differed slightly from other three-factor structures (e.g., Zinbarg, Barlow, & Brown, 1997).

While their work represents an important first step, Zvolensky et al. (2001) correctly acknowledged that their results may not be representative of all Native American peoples. Most importantly, large differences exist among Native American Indians. Indeed, some (e.g., Allen, 1998; Herring, 1999; Norton & Manson, 1996) contend that differences between Native American subgroups exceed differences within the majority culture. The variance

becomes clear when one considers that there are 510 federally recognized (Bureau of Indian Affairs, 1991) and 365 state recognized Indigenous entities in the United States (Manson & Trimble, 1982). While Zvolensky et al. sampled a broad cross-section of Native American peoples representing a variety of regional and tribal affiliations, this approach may mask important variability resulting from regional or tribal differences. This study was therefore conducted to further explore the factor structure of the ASI in a more homogeneous sample of Native Americans living on or near reservation land in the Northern Plains region of the United States. We sought to test whether the Zvolensky et al. factor structure fit a more homogenous sample of Native Americans.

2. Methods

2.1. Participants and procedures

American Indian participants (n = 146; 65.1% women) voluntarily provided data during an on-reservation health fair in Midwest USA. Researchers explained the purpose and nature of the anonymous questionnaires, obtained written consent, and provided $5.00 for participation. One investigator (TJD) and several assistants remained onsite to answer questions or concerns. "American Indian" status was established through enrollment in a federally recognized tribe or demonstrated family lineage and community recognition. Most participants (n = 119; 81.5%) were from the same tribe, nine were from neighboring Midwestern tribes/Midwestern plains tribes, and the rest represented various tribes. Four (2.7%) did not report tribal affiliation. Because of an agreement with tribal council, specific tribal affiliations will not be presented. Most (n = 129; 88.4%) were living on a reservation. The sample ranged in age from 18 to 65 years (M = 36.0; SD = 12.1), 67 (45.9%) were married or cohabitating, 48 (32.9%) had never married, 24 (16.4%) were divorced or separated, and 7 (4.8%) were widowed.

2.2. Measure

As part of a larger study, participants completed a demographics form and a brief battery of questionnaires. For the purposes of this study, only data from the ASI were examined. The ASI has demonstrated excellent reliability and validity with clinical and nonclinical samples (see Peterson & Plehn, 1999; Peterson & Reiss, 1992). In addition, Zvolensky et al. (2001) reported good reliability (0.81, total scale) with a sample of Native American college students. Although the ASI items are typically summed to a single score, several studies have suggested a multifactorial ASI structure. Following a review of the published factor structures, Zinbarg, Mohlman, and Hong (1999) concluded that three-factor models provide the best account of the construct.

3. Results

3.1. Preliminary analyses

Scores on the ASI ranged from 0 to 60 (M = 17.26; SD = 12.04). A sex difference was found on ASI scores, $F(1, 140) = 6.27$; $p = 0.013$, with women, M = 19.12; SD = 13.24, scoring significantly higher than men, M = 13.94; SD = 8.71. No differences emerged by marital status,

tribal affiliation, or whether or not the participant lived on a reservation, Fs < 1.33; ps > 0.25, and scores were not significantly related to age, $r = 0.12$; $p = 0.15$. The ASI full scale score demonstrated excellent internal consistency ($\alpha = 0.925$). Corrected item-total correlations ranged from $r = 0.32$–0.76, and no item's removal would have increased α appreciably. Poorer internal consistency was found when our data were computed according to the Zinbarg (Somatic: $\alpha = 0.907$; $r = 0.60$–0.77; Cognitive: $\alpha = 0.787$; $r = 0.63$–0.68; Social: $\alpha = 0.558$; $r = 0.29$–0.51) or Zvolensky models (Somatic: $\alpha = 0.901$; $r = 0.51$–0.76; Cognitive: $\alpha = 0.863$; $r = 0.60$–075; Social: $\alpha = 0.562$; $r = 0.40$).

3.2. Confirmatory factor analysis

Given that the Zinbarg et al. three-factor model appears to be most widely accepted based on majority culture samples, and that Zvolensky et al. obtained a similar model, these models were selected a priori to evaluate the fit of our data. To test these three-factor models, confirmatory factor analysis was conducted using LISREL 8.2 (Jöreskog & Sörbom, 1997). As ASI items are ordinal, the data were converted into a matrix of product-moment, polychoric, and polyserial correlations using PRELIS 2.20 (Jöreskog & Sörbom, 1997), which were used to test the Zvolensky et al. (2001) and Zinbarg, Barlow, and Brown (1997) models. Fit was assessed by the Standardized Root Mean Square Residual (SRMR; ideally ≤ 0.05), Root Mean Square Error of Approximation (RMSEA; ideally 0.02 to 0.07), and Non-Normed Fit Index (NNFI; ideally ≤ 0.95). Analysis of the Zvolensky et al. model yielded a significant goodness of fit χ^2 ($\chi^2 = 431.09$; $p < 0.001$; $df = 101$) and poor fit indices (SRMR = 0.067; RMSEA = 0.13; NNFI = 0.78). Similarly, the Zinbarg et al. (1997) model yielded a significant goodness of fit χ^2 ($\chi^2 = 297.49$; $p < 0.001$; $df = 74$) and poor fit indices (SRMR = 0.07; RMSEA = 0.15; NNFI = 0.80).

3.3. Exploratory factor analysis

Given the lack of good fit to the previous models, we tested the structure of our data using exploratory factor analysis (principal components analysis). As ASI subscales are generally correlated moderately, an oblique (oblimin) rotation was used. We determined the number of factors to retain by way of the Kaiser rule (i.e., eigenvalue > 1; Kaiser, 1961), scree plot examination, and factor structure interpretability. Using the Kaiser rule, three factors were extracted. This solution, however, was not optimal as 12 of 16 items were multivocal, loading at 0.40 or greater on two or more factors, and no logical pattern emerged from the items loadings. Examination of the scree plot suggested a unifactorial structure; thus a single factor solution was extracted. All items loaded greater than 0.40 on the factor with the exception of item 5 (It is important to me to stay in control of my emotions) which loaded at 0.36 (Table 1).

Table 1. Factor loadings for exploratory single-factor and three-factor model

	Unifactorial solution	Three-factor solution		
ASI item	Factor 1	Factor 1	Factor 2	Factor 3
It is important to me not to appear nervous	**0.513**	**0.432**	**0.773**	0.231
When I cannot keep my mind on a task, I worry that I might be going crazy	**0.609**	**0.715**	0.349	0.161
It scares me when I feel shaky	**0.728**	**0.659**	**0.514**	**0.508**
It scares me when I feel faint	**0.701**	**0.556**	**0.411**	**0.671**
It is important to me to stay in control of my emotions	0.356	0.204	**0.844**	0.199
It scares me when my heart beats rapidly	**0.743**	**0.649**	**0.507**	**0.569**
It embarrasses me when my stomach growls	**0.534**	0.315	0.199	**0.763**
It scares me when I am nauseous	**0.738**	**0.549**	0.289	**0.840**
When I notice my heart beating rapidly, I worry that I might be having a heart attack	**0.778**	**0.730**	0.167	**0.667**
It scares me when I become short of breath	**0.786**	**0.704**	0.279	**0.685**
When my stomach is upset, I worry that I might be seriously ill	**0.761**	**0.708**	0.004	**0.722**
It scares me when I am unable to keep my mind on a task	**0.808**	**0.809**	0.333	**0.529**
Other people notice when I feel shaky	**0.723**	**0.718**	0.237	**0.510**
Unusual body sensations scare me	**0.767**	**0.783**	0.322	**0.529**
When I am nervous, I worry that I might be mentally ill	**0.749**	**0.843**	0.166	0.382
It scares me when I am nervous	**0.809**	**0.833**	0.399	**0.455**

Values in bold are loadings greater than 0.400. The unifactorial solution explained 49.66% of the variance, while the three factors accounted for 49.66, 8.18,and 6.53% of the variance, respectively.

4. Discussion

Our attempt to replicate different three-factor ASI structures derived using a heterogeneous sample of Native American college students, and a primarily Caucasian sample, yielded poor fit between either model and our data. The lack of fit with the Caucasian-based factor structure was not unexpected, as cross-cultural evaluations of the ASI have yielded discrepant results from those obtained using Caucasian samples (Carter, Miller, Sbrocco, Suchday, & Lewis, 1999; Zvolensky et al., 2003). Consequently, we employed exploratory factor analysis and extracted a unifactorial structure. Of particular importance is the recognition that the factor structure obtained using the heterogeneous sample of Native American students attending Haskell University (Zvolensky et al., 2001) did not fit for the more homogeneous sample used here. While several reasons may exist for this difference, one explanation is that their sampling from many regional and tribal groups produced results unrepresentative of any specific group. Consequently, our data may indicate that cross-cultural studies should focus on discrete subpopulations rather than clustering a broad and diverse range of peoples under a single classification. It is also possible that the differences may relate to differences in cultural identification, given that acculturation has

been implicated in the higher rates of psychopathology among Native Americans (Duran & Duran, 1995; McDonald, Jackson, & McDonald, 1991). The Haskell students who left home to attend college may have been more acculturated than our reservation sample, many of whom had never lived off the reservation.

The use of monetary compensation could be seen as a potential confound leading to overrepresentation of financially strained individuals. This is doubtful, however, as the entire region is considered very low income. Still, other recruitment methods could test this possibility. In addition, our sample did not exclusively contain members of a single tribe; thus tribal differences may have influenced our data. However, most participants who were not from the primary tribe were members of neighboring tribes, so this seems unlikely. Finally, our sample size may be suboptimal for factor analysis, thus replication with larger samples is warranted.

While there appears to be a set of core characteristics that comprise Native Americans' world-view (Dana, 1993; McDonald, Morton, & Stewart, 1993) the high degree of variability among Native American cultures leads to tribal distinctions that may not be accounted for by a single standardized measure (Trimble, 1977). The present study highlights the importance of considering assessment measures within the context of a specific subgroup rather than broader cultural groupings.

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