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THE FACTOR STRUCTURE OF ANTISOCIAL PERSONALITY DISORDER CRITERIA
ACROSS ETHNIC GROUPS

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ABSTRACT

Antisocial Personality Disorder (ASPD) afflicts 3- 4.5% of men and 0.8-1% of women in the general population, with close to equal prevalence rates within ethnic groups (American Psychiatric Association, 2000; Robins & Regier, 1991, as cited in Derefinko & Widiger, 2008). However, few studies have explored whether the assessment tools for ASPD demonstrate measurement equivalence across these equally affected ethnic groups. The International Personality Disorder Examination Screening Questionnaire (IPDE-SQ; Loranger, 1999) is one such assessment tool that is fairly widespread in its use, but its measurement equivalence for specific personality disorders across ethnic groups has rarely been evaluated. This study uses data from the Collaborative Psychiatric Epidemiology Surveys (CPES) to evaluate the factorial validity and measurement equivalence of the IPDE-SQ ASPD items. Results of this study suggest that a single factor solution fits across ethnic groups, possibly indicating that the IPDE-SQ ASPD items have measurement equivalence across ethnic groups.

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Introduction

Antisocial Personality Disorder (ASPD) is characterized by a “pervasive pattern” (p. 291) of social norm violations, such as the violation of other’s rights and general disregard for these rights. Additional characteristics of ASPD include deceitfulness, aggression and irresponsibility (American Psychiatric Association, 2000). ASPD is a prevalent personality disorder that has serious implications for the individual, and society at large (Derefinko & Widiger, 2008). Among the general population, the prevalence of ASPD is between 3-4.5% in men and 0.8-1% in women (American Psychiatric Association, 2000; Robins & Regier, 1991, as cited in Derefinko & Widiger, 2008). However, the rates of ASPD increase for different subsets of the population. It is estimated that 50-60% of incarcerated offenders meet the diagnostic criteria for ASPD (Hare, Hart, & Harpur, 1991). Additionally, some research indicates that there are higher rates of ASPD among substance abusers and alcoholics than the prevalence rates found in the general population (Cale & Lillienfield, 2002; Goodwin & Hamilton, 2003; Grant, Stinson, Dawson, Chou, Ruan & Pickering, 2004; Carrol, Ball, & Rounsaville, 1993; Bucholz, Hesselbrock, Heath, Kramer, & Schuckit, 2000).

With regard to the individual, ASPD is associated with increased illness and injuries (Sheperd, Farrington, & Potts, 2004), along with comorbid substance abuse (Cale & Lillienfield, 2002; Goodwin & Hamilton, 2003; Grant et al., 2004), and additional personality disorders (Goldstein & Grant, 2009). In terms of treatment, an ASPD diagnosis complicates intervention methods and treatment plans for comorbid mental disorders, often slowing the recovery process or stalling it completely (Shea, Widiger, & Klein, 1992; Guy, Poythress, Douglas, Skeem, & Edens, 2008).

At the societal level, those with ASPD are more likely to engage in criminal activity and highly utilize medical services (American Psychiatric Association, 2000; Goldstein & Grant, 2009). In a study of a psychiatric ward population, patients with ASPD had higher rates for all criminal offenses than the non-psychiatric ward sample used as a control group, and these same patients had more total offenses than the control group (Hodgins, Mednick, Brennan, Schulsinger, & Engberg, 1996). ASPD is also correlated with homicide and spousal abuse (Eronen, Hakola, & Tiihonen, 1996; Dinwiddie, 1992; Else, Wonderlich, Beatty, Christie, & Staton, 1993). In a sample of convicted Finnish murderers, the presence of ASPD significantly increased the risk of homicide for both men and women more than any other disorder, and only schizophrenia elevated the risk significantly but to a lesser degree than ASPD (Eronen et al., 1996). Additionally, several studies found a correlation between spousal abuse and ASPD. Dinwiddie (1992) found that those who committed spousal abuse had higher lifetime rates of ASPD. Similarly, Else and others (1993) found that a sample of spousal abusers scored higher in the Minnesota Multiphasic Personality Disorder Inventory (MMPI) Antisocial Personality Disorder scale than the control group of participants who did not abuse their spouses.

The high utilization of medical services by individuals with ASPD creates another concern at a societal level. Sheperd and others (2004) found a positive relationship between antisocial behavior and illness, while also finding that an increase in the number of injuries was linked to the presence of antisocial behavior in adolescents and young adults. A second study using a sample of pathological gamblers found that gamblers with ASPD had higher levels of psychological distress and more severe medical problems (Pietrzak & Petry, 2005). The elevated levels of injuries and illness experienced by individuals with ASPD not only merits some

concern, these individuals also utilize medical services more often than other individuals--causing possible strains on community resources.

Due to the pervasiveness of ASPD and the implications of ASPD for both the individual and their community, identifying individuals that lie somewhere in the spectrum of ASPD or have a probable diagnosis of ASPD is especially important. Assessment or screening tools are vital in the identification process. A number of instruments have been developed to assess ASPD (e.g. Morey, 2007). Most of these measures are too long to be used in large scale screenings. One instrument that has been developed as a screening tool is the ASPD is the International Personality Disorder Examination Screening Questionnaire (IPDE-SQ; Loranger, 1999).

The IPDE-SQ is a screening instrument that assesses all ten DSM-IV personality disorders and can be used as part of a two-step process in conjunction with the International Personality Disorder Examination (IPDE; Loranger, 1994). A study conducted by Lenzenweger and others (1997), which explored the feasibility of a two-step process using the IPDE-SQ and the IPDE for the evaluation of personality disorders, illustrated that the IPDE-SQ had high sensitivity, moderate specificity, a high negative predictive power, and a low positive predictive power. While this preliminary study was a step toward examining the validity of the IPDE-SQ, the study focused on the ability of the IPDE-SQ to identify any personality disorder--not a specific personality disorder--and had a fairly homogenous sample.

Due to the focus of the study by Lenzenweger and others (1998) on the identification of any personality disorder, the usefulness of the study for those seeking answers to research questions about a particular personality disorder might be limited; however, a major finding of the study for any prospective user of the IPDE-SQ is the high accuracy of the screener in

identifying the occurrence of someone without a personality disorder (Taylor et al., 2008). Another potentially limiting aspect of the study by Lenzenweger and others (1997) is the relatively homogenous sample used. In their study, the sample comprised of first-year undergraduate students that were not ethnically representative of the general population. Due to this sample, questions about the measurement equivalence of the IPDE-SQ across ethnic groups were not within the scope of the study, but these questions are of utmost importance in an increasingly multicultural world.

Ethnic Groups and the IPDE-SQ

From 2000 to 2010, the vast majority of growth in the United States population has occurred within groups who report being something other than Caucasian, and half of the population growth in the United States was accounted for by people of Hispanic ethnicity (U.S. Census Bureau, 2010). In an increasingly multicultural world, it is necessary to know whether there are differences among ethnic groups in the symptomology of a personality disorder or biases present in the assessment of personality disorders. Without this knowledge, potential biases could contribute to the already present disparities in the quality of mental health care and access to these services observed for ethnic groups when compared to Caucasian groups (Alegria et al., 2002; Chow, Jaffee, & Snowden, 2003; Cook, McGuire, & Miranda, 2007; Katoaka, Zhang, & Wells, 2002; Wells, Klap, Koike, & Sherbourne, 2001; US Department of Health and Human Services, 2001).

Unfortunately, the majority of research related to psychopathology and assessment use non-Hispanic Caucasian samples, and the findings from this research dominates both topics. There is much need for research involving ethnically diverse samples, especially when it comes

to the assessment, evaluation, and treatment of mental disorders (Miranda et al., 2005; Sue, 1999; US Department of Health and Human Services, 2001).

Very few studies utilizing or evaluating the IPDE-SQ have used ethnically diverse samples. Of the studies found that used the IPDE-SQ on an ethnically diverse sample, none focused on ASPD. However, two studies explored the factor structure of the IPDE-SQ Borderline Personality Disorder items. One study determined that a four-factor solution fit across all ethnic groups (Selby & Joiner, 2009), while the other found that there were two different factor solutions which fit for certain groups (Ellison, Nelson & Levy, in review). While the study conducted by Selby and Joiner (2009) found that the IPDE-SQ BPD items had the same factor structure across groups, different factor loadings for the same IPDE-SQ BPD items across ethnic groups were observed. The findings for both studies lead to doubts about the measurement equivalence of the IPDE-SQ BPD items, and also raise the question: Do the IPDE-SQ items for other personality disorders demonstrate measurement equivalence across ethnic groups? This question has yet to be answered for the IPDE-SQ ASPD items.

ASPD, Psychopathy, & Ethnicity

Research exploring differences across ethnic groups in the symptomology, or assessment of ASPD is scarce. The Epidemiological Catchment Area study described by Derefinko and Widiger (2008) estimated that there were no differences in the prevalence of ASPD within African American and Caucasian populations, but more research exists concerning ASPD within Caucasian populations (Robins & Regier, 1991). Additionally, several studies have explored antisocial behavior among adolescents and the differences across ethnic groups, with mixed results (e.g. Bird, Canino, Davies, Zhang, Ramirez, & Lahey, 2001; Dekovic, Wissink, & Meijer, 2004). However, these studies do not provide much insight into specific differences in ASPD

across ethnic groups, and no studies explore the possible factor invariance of ASPD symptoms or characteristics across ethnic groups.

The construct of psychopathy and research related to the construct provides some limited insight into the possible differences in the symptomology or assessment of ASPD across ethnic groups. The term psychopathy encompasses a set of personality and behavioral characteristics most commonly evaluated by the Psychopathy Checklist (Hare, 1980) or Psychopathy Checklist-Revised (Hare, 1991). Such personality characteristics as shallow affect, lack of empathy, and lack of remorse, are all associated with the construct of psychopathy, as are the antisocial characteristics of impulsivity and irresponsibility (Hare, Hart, & Harpur, 1991).

Many studies support that the PCL-R consists of two factors (Hare, Harpur, Hakstian, Forth, Hart, & Newman, 1990; Edens, Buffington-Vollum, Colwell, Johnson, & Johnson, 2002). Factor 1 consists of more interpersonal and personality features, while Factor 2 has more behavioral features. Of the two factors, Factor 2 correlates more with an ASPD diagnosis and ASPD criteria (Hare, Hart, & Harpur, 1991).

Studies assessing differences across ethnic groups related to psychopathy or use of the PCL-R provide some enlightenment in regards to possible ethnic group differences in the presentation or assessment of ASPD. In a meta-analysis conducted by Skeem and colleagues (2004), no significant difference between Caucasians and African American populations were found in the measurement of psychopathy or across factors. Another study found the PCL-R to be a valid measure of psychopathy for Latinos when compared to matched Caucasian and African American groups (Sullivan, Abramowitz, Lopez, & Kosson, 2006).

Rough inferences can be formed between these findings and possible differences across ethnic groups in the assessment of ASPD. The aforementioned studies found no differences

across ethnic groups in the measurement of psychopathy. Additionally, these studies did not find any differences across ethnic groups in Factor 2 specifically, which is the factor most correlated with ASPD criteria (Hare, Hart, & Harpur, 1991). However, although there is plentiful evidence supporting a two factor structure for the PCL-R, evidence for three- and four-factor structures of the PCL-R have arisen in recent years (e.g. Cooke, Kosson, & Michie, 2001; Cooke & Michie, 2001;). In the four-factor structure of PCL-R, there is an antisocial factor which is closely related to ASPD criteria (Hare, 2003). The findings of the study conducted by Sullivan et al. (2006) provided some evidence that the antisocial factor might have limited validity in African American groups.

Due to the scarcity of research about ASPD and ethnic groups, only very limited comparisons can be made between the aforementioned studies and this current study. This study seeks to evaluate the measurement equivalence of the IPDE-SQ ASPD items across ethnic groups. Using data obtained from the Collaborative Epidemiology Surveys (CPES), an exploratory factor analysis will be conducted with the seven IPDE-SQ ASPD items. Results of this study will give a preliminary indication as to whether the IPDE-SQ ASPD items have measurement equivalence.

Method

Participants

Data for this study was obtained from the Collaborative Psychiatric Epidemiology Surveys (CPES) data set. The CPES data set is a compilation of three surveys, the National Comorbidity Survey-Replication (NCS-R), the National Study of American Life (NSAL), and the National Latino and Asian American Study (NLAAS; Alegria, Jackson, Kessler, & Takeuchi, 2007). All three surveys used a four-stage national area probability sample which was nationally representative. Two of the surveys, the NSAL and the NLAAS, used stratified sampling to obtain additional respondents of certain ethnicities. A more detailed description of the sampling methods used by the CPES is provided elsewhere (Heeringa et al., 2004; Pennell, 2004).

As part of the CPES questionnaire, respondents were asked a selection of questions from the IPDE-SQ, including all seven ASPD items. Of the 20,013 total respondents for the CPES, 8,403 were eliminated due to the fact that they had no data for the IPDE-SQ ASPD items or they did not have a response for all 7 IPDE-SQ ASPD items. Additional cases (N = 284) were eliminated if the respondent was part of the category 'All Other Races.' The final sample size for this study was 11,391 respondents, which were divided into various ethnic groups.

Measures

Race/Ethnicity. Respondents were asked their ethnicity or ancestry as part of the basic questionnaire for each survey. Between the NCS-R, NSAL, and NLAAS, respondents had more than 200 ethnicities to select from. These ethnicities were later grouped into six classifications in the CPES data set: All Other Asian, Mexican, All Other Hispanic, Afro-Caribbean, African American, and Non-Latino White. Some examples of ethnicities found in the 'All Other Asian'

category are Chinese, Vietnamese, and Filipino. Similarly, examples of ethnicities found in the ‘All Other Hispanic’ category are Puerto Rican, and Cuban. The author refers to these groups as Asian, Mexican, Non-Mexican Hispanic, Afro-Caribbean, African American, and Non-Latino White.

International Personality Disorder Examination Screening Questionnaire (IPDE-SQ; Loranger, 1999). The IPDE-SQ is a screening measure for ten *DSM-IV* personality disorders. The ten *DSM-IV* personality disorders are paranoid, schizoid, schizotypal, antisocial, borderline, histrionic, narcissistic, avoidant, dependent, and obsessive compulsive. As was demonstrated by Lenzenweger and others (1997), this screener has high sensitivity, moderate specificity, a high negative predictive power, and a low positive predictive power. Although the IPDE-SQ is a 77-item true-false measure, only a subset of these questions were used in the CPES. The IPDE-SQ items used in the CPES included all 7 IPDE-SQ ASPD items, which are the ones used in this study. The specific contents of these items can be observed in Table 4.

Statistical Analysis

Measurement equivalence occurs when the relationship between the score or responses of a measure and the latent factor structure are equal across groups (Drasgow & Kanfer, 1985). Although there are many statistical tests that can assess measurement equivalence, an exploratory factor analysis was used in this study to evaluate both the measurement equivalence and factorial validity of the IPDE-SQ ASPD items. If all of the observed responses of the IPDE-SQ ASPD items are explained by the same factor structure or same number of factors across all groups, then it is a preliminary indication that the IPDE-SQ ASPD items have measurement equivalence (Drasgow, 1984; Drasgow & Kanfer, 1985). Although much can be done with factor analysis methods, only using the number of factors across ethnic groups as an indication of

measurement equivalence is generally considered a weak test unless accompanied by more stringent ones in addition to it (Marsh et al., 2009; Vandenberg & Lance, 2000).

All six exploratory factor analyses (EFA) were conducted using the statistical software, Mplus version 5.21 (Muthen & Muthen, 2007). An oblique (geomin) rotation and robust weighted least squares (WLSMV) were used for all of the EFAs. WLSMV was selected because a computer simulation study conducted by Flora and Curran (2004) indicated that WLSMV performed better than weight least squares (WLS) in many conditions, particularly with categorical data. In many cases, WLSMV lead to more accurate test statistics, parameter estimates, and standard errors (Flora & Curran, 2004).

Decisions concerning the best fitting factor structure were based on multiple factor solutions provided automatically by Mplus with the output of an exploratory factor analysis, and several other indicators of fit. The other indicators were selected based on the suggestions of Hu and Bentler (1999) for good fit. The suggestions made by the authors were that the data have a non-significant chi-square value, a Comparative Fit Index (CFI) greater than or equal to 0.95, a Tucker-Lewis Index (TLI) greater than or equal to 0.95, a Root Mean Square Error of Approximation (RMSEA) less than or equal to 0.06, and a Standardized Root Mean Squared Residual (SRMR) less than or equal to 0.08. For a factor solution to be considered a good fit within this study, three out of four of the indicators had to be within the range suggested by Hu and Bentler (1999). However, it should be noted that if a factor solution showed a significant chi-square value, the author would not necessarily interpret as an indicator of misfit, due to the fact that this value can be inflated by large sample sizes (Drasgow & Kanfer, 1985). The previously mentioned indicators will be used in conjunction with the chi-square value to make this decision. The model with the fewest number of factors that met the described characteristics

or the most parsimonious model was selected for each ethnicity. If the factor solutions for each ethnic group have the same number of factors, further tests of measurement or invariance can be conducted within a confirmatory factor analysis framework (Vandenberg & Lance, 2000).

Results

Race/ethnicity

The 20,013 CPES respondents were divided into six ethnic groups labeled: Asian, Mexican, Non-Mexican Hispanic, Afro-Caribbean, African American, and Non-Latino whites. Respondents that fell into the category of ‘All Other Races’ were eliminated due to the fact that the group encompassed more than one unspecified ethnic group. Two hundred and eighty four respondents were eliminated for this reason. The final sample size for this study was 11,391 respondents, which were divided into various ethnic groups: 106 (0.9%) were Asian, 393 (3.5%) were Mexican, 390 (3.4%) were Non-Mexican Hispanic, 1441 (12.7%) were Afro-Caribbean, 4168 (36.6%) were African American, and 4893 (43%) were Non-Latino White (see Table 2).

Missing Data

Of the remaining 19,729 respondents, 11,462 responded to the IPDE-SQ ASPD items. Those who did not respond to these items were eliminated, as well as those who responded “I don’t know” or they refused to answer an IPDE-SQ ASPD items. Only 71 respondents were eliminated due their answer of “I don’t know” or refusing to answer an item, which did not result in large amounts of respondents being eliminated from one ethnic group. Respondents were eliminated for the aforementioned reasons because an exploratory factor analysis requires that no data is missing (see Tables 1 & 2).

Factor Analyses

The exploratory factor analyses illustrated that a one factor solution fit five of the six ethnic groups, with the exception of the Asian group. Due to the small number of respondents in the Asian group, an exploratory factor analysis could not be conducted. The small number of respondents caused problems in the form of negative residual variance, and instances where there

were not enough responses for a certain variable, both of which inhibited the performance of a factor analysis. Specifically, only 5 respondents in the Asian group stated that they do not feel bad when they hurt or upset someone. Ninety seven percent of the respondents in the Asian group stated that they did feel bad when they hurt someone.

With the exception of the Asian group, all other ethnic groups had a one factor solution which can be observed in Table 4. In the factor loadings for the remaining five ethnic groups, the IPDE-SQ items ‘I’ve never been arrested’ and ‘I usually feel bad when I hurt or upset someone’ loaded negatively due to the fact that the author decided not to reverse code the items prior to the factor analysis.

For all five ethnic groups, the IPDE-SQ item with the lowest loading was ‘I usually feel bad when I hurt or upset someone,’ however the groups varied in the IPDE-SQ items that had the highest loading. For the Mexican group, the IPDE-SQ items ‘I lose my temper and get into physical fights,’ ‘I take chances and do reckless things,’ and ‘It’s hard for me to stay out of trouble,’ had the highest loadings. The Non-Mexican Hispanic group shared the same IPDE-SQ items for their highest loading as the Mexican group, but had the additional item of ‘I will lie or con someone if it serves my purpose.’

The three remaining ethnic groups—African American, Afro-Caribbean, and Non-Latino Whites—all had statistically significant chi-square values, but these values were likely to be inflated due to the larger sample sizes of these groups (4168, 1441, and 4893 respondents, respectively; Dragow & Kanfer, 1985). All other indicators suggested that a one-factor structure had the best fit. For the African American group, the IPDE-SQ items with the highest loadings were identical to those of the Hispanic group; that is, the IPDE-SQ items ‘I lose my temper and get into physical fights,’ ‘I take chances and do reckless things,’ ‘It’s hard for me to

stay out of trouble,' and 'I will lie or con someone if it serves my purpose,' had the highest loadings. Both Afro-Caribbean and 'Non-Latino Whites' had the same IPDE-SQ items as their highest loadings.

Generally, these results suggest that the IPDE-SQ ASPD items do have measurement equivalence; however, more stringent tests are required to further confirm these preliminary results. The IPDE-SQ items 'I usually feel bad when I hurt or upset someone,' and 'I've never been arrested' had the lowest loadings for all groups. The other five IPDE-SQ ASPD items had higher loadings in varying combinations for each group. Additional testing is required to determine whether the factor loadings across ethnic groups are equal.

Discussion

Research using ethnically diverse samples is rare, and studies assessing differences across ethnic groups in various measures are conducted even less frequently (Miranda et al., 2005; Sue, 1999). It is vital that measures or assessment tools demonstrate measurement equivalence, that is the relationship between the responses of the measure and the latent factors are equal across groups. If a measure or assessment tool does not have measurement equivalence, nonequivalence could cause significant differences in responses, or at the very least make differences between groups hard to interpret (Drasgow & Kanfer, 1985; Drasgow, 1984). This study sought to evaluate the measurement equivalence and factorial validity of the IPDE-SQ ASPD items in a sample of 11,391 CPES respondents. Assessing the measurement equivalence of the IPDE-SQ is particularly important due to its widespread use with clinical and non-clinical populations and the chronic nature of ASPD (Moran, 1999). An exploratory factor analysis was used to see if there were differences in the factor structure of the IPDE-SQ ASPD items. For five of the six groups, there was a one factor solution. No factor analysis could be conducted for the Asian due to an unusually small sample size. Since a one factor solution had the best fit across groups, there is some indication that the IPDE-SQ ASPD items have measurement equivalence. However, since only using the factor structure of each ethnic group as indication of measurement equivalence is considered a weak standard, more stringent testing is necessary to confirm these findings (Marsh et al., 2009; Vandenberg & Lance, 2000).

A measurement or assessment tool that demonstrates measurement equivalence indicates that there is no difference in the relationship between the response of the measure and the latent factors that account for the variance of these responses. Without measurement equivalence, differences among groups cannot be assessed because it is unknown whether the differences are

caused by inherent biases or actual differences between groups. Assessing the measurement equivalence of the IPDE-SQ is crucial due to its widespread use in clinical and non-clinical populations (e.g., Heeringa et al., 2004; Alvaro-Brun & Vegue-Gonzalez, 2008). This point is further illustrated by the fact that the IPDE-SQ was used in the CPES with a nationally representative sample of 20,013 respondents.

Measurement equivalence of the IPDE-SQ for the ASPD items is particularly important. ASPD is associated with early unnatural death (Moran, 1999), increased injuries (Sheperd, Farrington, & Potts, 2004), as well as commonly comorbid with substance abuse (Cale & Lillienfield, 2002; Goodwin & Hamilton, 2003; Grant et al., 2004), , and other personality disorders (Goldstein & Grant, 2009). Additionally, ASPD presents certain public health concerns due to its relationship with crime and increased rates in incarcerated and substance abusing populations. Detection of ASPD is also vital to treatment. ASPD affects treatment of comorbid disorders, often by slowing the course of treatment or halting it entirely (Shea, Widiger, & Klein, 1992; Guy, Poythress, Douglas, Skeem, & Edens, 2008). With already present disparities in mental health service access among ethnicities, biases due to measurement nonequivalence could exacerbate this problem. Due to the general lack of research concerning ethnic groups and ASPD, this study contributes to the research available and begins to answer the question, do the IPDE-SQ ASPD items have measurement equivalence?

Although there is limited research that can be used to evaluate the results of this study against other findings, some comparisons can be made between our results and psychopathy research. Psychopathy encompasses certain personality and behavioral features which are measured by the PCL-R. While various factor structures have been proposed for the PCL-R, one of the factors of the two-factor structure has been shown to correlate with ASPD criteria. In

the two factor structure, Factor 1 is associated with personality and interpersonal features, while Factor 2 includes more items related to an antisocial lifestyle and behaviors (Harpur, Hakstian, Forth, & Hart, 1990). Factor 2 has the strongest correlation with ASPD criteria (estimated to be about 0.6 for Factor 2 versus 0.4 for Factor 1; Hare, Hart, & Harpur, 1991). Many studies have found the PCL-R to have no differences across ethnicities, and no difference in the factor structure of the PCL-R across ethnicities (Skeem et al., 2004; Sullivan et al., 2006). Our findings in this study are consistent with that of previous studies which found no differences across ethnicities for Factor 2 of the PCL-R. However, it is difficult to assess the similarities of these findings, considering that Factor 2 of the PCL-R is only correlated with ASPD criteria. Nonetheless, our findings contribute knowledge valuable to the assessment and future research of ASPD.

Limitations & Future Research

Although the results of this study are promising, they are not without limitations. There are three major limitations in this study: how the CPES data set was utilized in this study, the small Asian group size, and the strength of the exploratory factor analysis as proof of measurement equivalence.

The CPES data set compiled three surveys, the National Comorbidity Survey-Replication (NCS-R), the National Survey of American Life (NSAL), and the National Latino and Asian American Study (NLAAS). Although all three surveys used a four-stage national area probability sample, the NSAL had a special supplement for Afro-Caribbeans, and the NLAAS had a special supplement for Puerto Rican, Cuban, Chinese, Filipino, and Vietnamese groups. For both the NSAL and NLAAS, ethnicity stratification allowed more cost-effective oversampling of the desired ethnicities. These differences between the three surveys made it

necessary for the development of two weights in order for users to use the compiled data set and assume unbiased results (Alegria, Jackson, Kessler, & Takeuchi, 2007). This study did not utilize the weights when conducting our statistical analysis, meaning there is the chance of some bias.

Additionally, our study was unable to conduct an exploratory factor analysis on the Asian group. While attempting the EFA, it became apparent that the sample size of the Asian group was too small and lead to negative residual variance--which meant the EFA could not be conducted. Although our results for five of the six ethnic groups suggest that the IPDE-SQ ASPD items do have measurement equivalence, conclusions about the Asian group and the factor structure of the group cannot be made.

As previously described, our study used exploratory factor analyses to assess the measurement equivalence of the IPDE-SQ ASPD items across ethnicities. Our study revealed a one-factor solution for five of the six ethnic groups, but no further tests were conducted to assess whether the factor loadings within this factor were equal. According to Vandenburg and Lance (2000), observing the number of factors across groups are weak tests of measurement equivalence. Further analysis using a confirmatory factor analysis framework could possibly confirm our results with more stringent statistical tests.

There is great need for research exploring possible differences in ASPD or personality disorders across ethnicities. Future research should build on the findings of this study, and use more stringent tests to assess the measurement equivalence of both the IPDE-SQ ASPD items and the IPDE-SQ in general. Tests of measurement equivalence for the IPDE-SQ ASPD items should also use samples composed of sub-populations where there are higher prevalence rates of ASPD, such as incarcerated offenders, substance abusers, and alcoholics. Alvaro-Brun and

Vegue-Gonzalez (2008) conducted a study of the IPDE-SQ with a population of incarcerated offenders and found the IPDE-SQ to be less useful in identifying offenders with antisocial and borderline personality disorder. However, their study did not evaluate possible differences across ethnicities. Similar studies evaluating the measurement equivalence of other ASPD assessment tools should be conducted, as well as studies exploring the possible impact of these differences on diagnosis and treatment. Future studies should evaluate differences across ethnicities not only with factor analysis methods, but with such methods as item response theory as well.

Table 1
Race/Ethnicity Frequencies for CPES respondents

<u>Race/Ethnicity</u>	<u>Frequency & Percent</u>
Vietnamese	520 (2.6%)
Filipino	508 (2.6%)
Chinese	600 (3.0%)
All Other Asian	656 (3.3%)
Cuban	577 (2.9%)
Puerto Rican	495 (2.5%)
Mexican	1442 (7.3%)
All Other Hispanic	1106 (5.6%)
Afro-Caribbean	1492 (7.6%)
African American	4746 (24.1%)
Non-Latino Whites	7587 (38.5%)
Total	19729 (100%)

Table 2

Respondent frequencies by ethnicity

<u>Ethnicity/Race</u>	<u>Frequency & Percent</u>
Asian	106 (0.9%)
Mexican	393 (3.5%)
Non-Mexican Hispanic	390 (3.4%)
Afro-Caribbean	1441 (12.7%)
African American	4168 (36.6%)
Non-Latino Whites	4893 (43%)
Total	11391 (100%)

Table 3

Fit Statistics for Exploratory Factor Analyses of IPDE-SQ ASPD Items by Ethnic Groups

Ethnicity	<i>N</i>	Factors	χ^2	df	<i>p</i>	CFI	TLI	RMSEA	SRMR
Asian	106	-	-	-	-	-	-	-	-
Mexican	393	1	17.975	12	0.1164	0.954	0.947	0.036	0.081
Non-Mexican Hispanic	390	1	8.120	11	0.7025	1.000	1.031	<0.001	0.068
Afro-Caribbean	1441	1	28.526	13	0.0076	0.963	0.952	0.029	0.065
African American	4168	1	58.924	13	<0.0100	0.974	0.968	0.029	0.043
Non-Latino Whites	4893	1	61.562	13	<0.0100	0.977	0.973	0.028	0.052

Note. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual.

Table 4
Unstandardized Factor Loadings by Ethnicity

ASPD symptom (Item number)	<u>Ethnic Groups</u>					
	Asian	Mexican	Non-Mexican Hispanic	Afro- Caribbean	African American	Non-Latino Whites
I've never been arrested. (11)	-	-0.413	-0.353	-0.433	-0.404	-0.471
I usually feel bad when I hurt or upset someone. (18)	-	-0.313	-0.068	-0.236	-0.230	-0.327
At times I've refused to hold a job, even when I was expected to. (20)	-	0.550	0.427	0.484	0.599	0.598
I will lie or con someone if it serves my purpose. (29)	-	0.476	0.714	0.685	0.696	0.641
I lose my temper and get into physical fights. (47)	-	0.754	0.742	0.736	0.757	0.771
I take chances and do reckless things. (56)	-	0.690	0.708	0.641	0.727	0.794
It's hard for me to stay out of trouble. (74)	-	0.686	0.611	0.651	0.700	0.712

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