

Assessing Social Anxiety in African American and Caucasian Children:
An Initial Examination

by

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ABSTRACT

The purpose of this thesis study was to evaluate the nature of social anxiety in clinic-referred African American children versus their Caucasian counterparts. In particular, social anxiety symptom endorsement along the Social Phobia and Anxiety Inventory Scale for Children (SPAI-C; Beidel, Turner, & Morris, 1995) was examined in a sample of 107 African American and 364 Caucasian children (ages 7- to 17-years old) referred for anxiety. To evaluate symptom endorsement, simple descriptive analyses were conducted whereas measurement invariance tests were examined using confirmatory factor analyses. For the most commonly endorsed items, African American and Caucasian children shared seven of the top 10 most commonly identified social anxiety symptoms. Similar social fears across ethnicity focused on “assertiveness in situations perceived to be difficult” and “speaking to large groups of peers they do not know.” Findings also showed that African American children were more likely to report symptoms of “shaking when in social situations” than Caucasian children, and Caucasian children were more likely to report symptoms of “embarrassment when in front of adults” compared to African American children, but this was also on the basis of two items. When it came to the five factors of the SPAI-C, results showed measurement invariance across African American and Caucasian children. Overall, there were more similarities than differences between African American and Caucasian children in social anxiety symptoms based on the SPAI-C. Findings from this thesis study shed light on how to best accurately identify social anxiety among African American children compared to Caucasians, a contribution that can potentially impact assessment, treatment planning, and program response evaluation.

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Chapter 1

INTRODUCTION

Social anxiety disorder (also referred to as social phobia) is a consistent fear of social or performance situations in one or more areas, including public speaking, dating, and/or talking to new or unfamiliar people. The fear is typically accompanied by evaluation worries, is persistent (at least six months), and interferes with functioning in one or more areas (e.g., at home, school/work; American Psychiatric Association, 2000). A diagnosis of social anxiety is warranted when the anxiety or fear causes significant distress, avoidance, or interference in everyday functioning. Social anxiety disorder is one of the most common psychiatric problems in children and adolescents.

There is ample literature on the prevalence and clinical phenomenology of social anxiety in children and adolescents. However, most of this literature is based on samples of Caucasian children. As such, little is known about social anxiety among African American children (Hunter, & Schmidt, 2010; Neal, & Turner, 1991). Social anxiety research in children and with African Americans, in particular, is important for several reasons. Social anxiety (or severe shyness) places children at risk for other anxiety disorders, depression, loneliness (Beidel, Turner, & Morris, 1999; Perrin & Last, 1993), low peer acceptance (Greco & Morris, 2005), poor social skills (Beidel et al., 1999; Spence, Donovan, & Brechman-Toussaint, 1999), and school refusal behavior/truancy (Last, Hersen, Kazdin, Orvaschel, & Perrin, 1991). Since children are typically diagnosed with social anxiety as young as eight years old (Beidel & Turner, 1988; Beidel et al., 1999), with a mean age of onset of about 12 years old (Strauss & Last, 1993), this problem can interfere with important developmental milestones, including the acquisition

of skills to develop appropriate peer and romantic relationships. In addition, among adults, social anxiety has been linked to substance use/abuse problems, un-employment, and dependence on the welfare system (Lipsitz & Schneier, 2000; Morris, Stewart, & Ham, 2005; Tolman et al., 2009). Since some of the problems linked to social anxiety are associated with several negative outcomes, it is incumbent on this generation of social anxiety researchers to study these problems and their sequela in general, including among African Americans.

Thus, the purpose of the present thesis study was to examine the clinical phenomenology of social anxiety by comparing social anxiety symptom endorsement between clinic-referred African American and Caucasian children as well as by identifying similarities and/or differences in the facets of social anxiety between these two ethnic groups. To achieve these goals, the present thesis study focused on a widely used social anxiety self-rating scale. In this thesis study, data corresponded to 120 African American and 381 Caucasian children who completed the Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel, Turner, & Morris, 1995). The Introduction section of the thesis begins with a review of the literature on social anxiety among African American children (when child data are not available results from the adult literature are described). Then, a review of social anxiety measures is presented with a particular focus on comparative studies that report on the SPAI-C between African American and Caucasian children. Lastly, the Introduction outlines critical issues in the assessment of social anxiety across these ethnic groups with a particular focus on cross-ethnic measurement invariance theory in general and configural invariance in particular.

Social Anxiety among African Americans

Prevalence. The estimated prevalence of childhood social anxiety disorder has been found to range from about 1.6% to 13.1% (Essau, Conradt, & Pettermann 1999; Gren-Landell et al., 2009) with the majority of published research relying largely on Caucasian samples. As such, there is limited knowledge about the prevalence of social anxiety disorder in African Americans. More specifically, there is no published study reporting on the prevalence of social anxiety disorder in African American children or adolescents and only five studies have reported data on the prevalence of social anxiety in African American adults (+18 years; these adult studies are described below).

In Grant et al. (2005), 12-month and lifetime prevalence rates for anxiety diagnoses were reported for a sample of 43,093 adults who participated in the National Epidemiologic Survey on Alcohol and Related Conditions study (Grant et al., 2004). Based on the Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version (Grants, Dawson, & Hasin, 2001), it was found that African Americans had a significantly lower likelihood of having a 12-month and lifetime prevalence of social anxiety (2.0% and 3.5%, respectively) compared to Caucasians (3.0% and 5.5%, respectively). In another study, Breslau et al. (2006) reported on a sample of 4,180 Caucasians and 717 African Americans interviewed using the World Mental Health Survey Initiative Version of the World Health Organization Composite International Diagnostic Interview (WHM-CIDI; Kessler & Ustun, 2004). Breslau et al. (2006) found that the lifetime prevalence of social anxiety for African American adults was 10.8% whereas for their Caucasian counterparts it was 12.6% (when statistically compared, these rates were not significantly different). Ford et al. (2007) also reported prevalence

rates for social anxiety with results indicating that African Americans had a lifetime prevalence of about 4.49% and a 12-month prevalence of about 2.11% (based on the WHM-CIDI and using data corresponding to 837 African Americans who participated in the National Survey of American Life [Jackson et al. 2004]; no ethnic comparison group was included in this study). More recently, Himle, Baser, Taylor, Campbell, and Jackson (2009) reported on a sample of adults from the National Comorbidity Survey Replication. Based on the WHM-CIDI, there was a statistically significantly higher 12-month prevalence of social anxiety for Caucasians ($n = 6,696$) compared to the rate for African Americans ($n = 3,570$; rates were 7.11% for Caucasian and 4.55% for African Americans). However, when Himle et al. (2009) considered impairment associated with social anxiety diagnoses, socially anxious African Americans had higher impairment scores based on the World Health Organization's Disability Assessment Schedule II (Rehm et al., 1999) than Caucasians. Lastly, in the most recent study to date, findings were consistent with past trends reviewed herein. That is, Asnaani, Richey, Dimaite, Hinton, and Hofmann (2010) reported that the prevalence of social anxiety was significantly higher in Caucasians (12.5%; $n = 6,870$) than for African Americans (8.5%; $n = 4,598$), a finding based on the WMH-CIDI and using data from the Collaborative Psychiatric Epidemiology study (Heeringa et al., 2004).

When it comes to social anxiety measured via self-rating scales, there are few comparative studies published that have reported data comparing African American and Caucasian children. Beidel and colleagues have published most of this research using the Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel et al., 1995). For example, Beidel, Turner, and Morris (1999) compared mean SPAI-C scores for 14

African Americans and 33 Caucasians using a sample of clinic-referred adolescents 7-to 13-years-old. Results showed no significant social anxiety mean differences between these ethnic groups (Caucasian $M = 27.0$; African American $M = 21.2$), although there appeared to be a non-significant trend ($p < .08$) with Caucasians showing higher scores. In another study, Beidel, Turner, Hamlin, and Morris (2000) compared data corresponding to 45 African American and 200 Caucasian children (8-to 14-years old). Results showed no significant differences on the SPAI-C between African Americans ($M = 10.3$) and Caucasians ($M = 16.0$); although, among children who meet criteria for social anxiety, African Americans had significantly lower scores on the SPAI-C than Caucasians ($M_s = 22.7$ vs. 27.9). Lastly, Ferrell, Beidel, and Turner (2004) compared data corresponding to 10 African American and 23 Caucasian children (7-to 13-years-old) who met the Diagnostic Statistical Manual for Mental Disorders (DSM) criteria for social phobia. Findings showed that African Americans had lower SPAI-C social anxiety scores ($M = 25.53$) than Caucasians ($M = 26.07$), but the difference in scores did not reach statistical significance.

There are also few cross-ethnic comparative studies using other social anxiety measures, and the pattern of findings is overall the same. Compton, Nelson, and March (2000) reported on a community sample of 1,005 African Americans and 1,279 Caucasian children between 8- to 19-years-old (48.5% boys). Children were administered the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997) and ethnic groups were compared along the Social Anxiety subscale of the MASC. Results showed that African American children were significantly more likely to report social anxiety scores below the total sample mean ($M = 9.15$)

compared to Caucasians. In another study, Nishina, Juvonen, and Witkow (2010) compared 443 African American to 162 Caucasian sixth-grade students (45% boys) on the Social Anxiety Scale for Adolescents (SAS-A; La Greca & Lopez, 1998). Results showed that at the beginning of the school year, African Americans had higher social anxiety scores than Caucasians whereas in the middle of the school year Caucasians had higher scores than African Americans. As noted in the study, since children were assessed in 6th grade, it is possible that the group differences at the start of the school year reflect, in part, the school transition. In another study, Gordon and Teachman (2008) found no significant differences on the Social Avoidance and Distress Scale (Watson & Friend, 1969) when comparing a community sample of 39 African American ($M = 72.41$) to 39 Caucasian adolescents ($M = 75.69$) between 17- to 22-years-old (25% boys).

Clinical Phenomenology. The empirical and clinical anecdotal literature on anxiety in general and social anxiety, in particular, suggests there might be some variations in the expression of anxiety among African American children, perhaps not captured well by some social anxiety measures. As suggested by Kirmayer, Young, and Hayton (1995), there appears to be some indications that anxiety manifests itself differently across ethnic groups, including for African Americans. For example, Beidel, Turner, and Trager (1994) suggested that test anxiety could be a complex form of social anxiety. In their study of children who were classified as having test anxiety based on the Test Anxiety Scale for Children (Sarason, Davidson, Lighthall, & Waite, 1958), there were significantly more African Americans (70.6 %; $n = 17$) who also met the DSM criteria for social anxiety than Caucasian children (37.0%; $n = 27$). In particular, data

suggested that, for African Americans, social anxiety manifested itself in testing situations, which could reflect social evaluative concerns typical in socially anxious children. The notion that African Americans express anxiety (including social anxiety) differently also has been articulated by others (e.g., Cooper-Patrick et al., 1999; Neal & Turner, 1991; Snowden & Pingitore, 2002), including some who have suggested that African Americans seem to express mental health problems (e.g., depression and anxiety) through somatic and/or physiological symptoms. Symptoms such as headaches and abdominal pain have been linked to anxiety in African American children in Kingery, Ginsburg, and Alfano (2007) and also in White and Farrell (2006). Additionally, symptoms such as increased heart rate, dizziness, and intense numbing have been found to be a common response to anxiety for African American adolescents and adults (Gordon & Teachman, 2008; Smith, Friedman, & Nevid, 1999). While these variations in symptom response are interesting, there is little to no data showing why African Americans might be suffering more from anxiety related somatic and/or physiological reactions more than Caucasians or why African Americans might be attending to somatic and/or physiological reactions more than Caucasians.

Evaluative Summary

Collectively, data from these studies suggest that social anxiety appears to be significantly more prevalent in Caucasians than in African American children, although one study found that impairment levels associated with social anxiety were higher for African Americans. Low rates of social anxiety in African Americans may be explained in several ways. More specifically, social anxiety measures used in these studies might not be capturing well how social anxiety manifests itself in African American children

since these measures were developed with Caucasian samples. In addition, research on anxiety with African Americans suggests that, during anxiety provoking situations, African Americans report many physiological symptoms (Neal & Turner, 1991). Interestingly, the Social Anxiety subscale of the MASC and the SAS-A/SASC-R contain no physiological/somatic items. For this reason, these social anxiety scales could suffer from low sensitivity when it comes to capturing social anxiety in African Americans. The SPAI-C, on the other hand, contains 10 physiological/somatic items making it more conceptually relevant for African American children. The content of the SPAI-C physiological/somatic items is on rapid heart beating, shaking, headaches, stomachs, and sweating hands, which is an improvement over other social anxiety measures in terms of somatic item inclusion. Of course, it also might be the case that African Americans simply are low on social anxiety. This may result from factors protecting African Americans. In particular, there are data showing that compared to Caucasians, African Americans report equivalent or higher levels of self-esteem (Gray-Little & Hafdahl, 2000; Ramseur, 2004) as well as greater sense of racial identity, which may instill a sense of pride in social situations that are typically anxiety provoking for others (Chae, Lincoln, & Jackson, 2011; Craig & Richeson, 2011). While interesting, this possibility warrants greater in-depth research.

Why focus on the Social Phobia and Anxiety Inventory for Children? The Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel et al., 1995) is the most widely used social anxiety self-rating scale in the child anxiety and adolescent literature. Whereas there are many other well-established measures for assessing children's anxiety, including the Revised Children's Manifest Anxiety Scale (RCMAS, Reynolds &

Richmond, 1979) and the State-Trait Anxiety Inventory for Children (STAIC-Trait; Spielberger, 1973), these other scales assess general levels of anxious distress and do not measure the different facets of social phobia (Beidel et al., 1995). There also are other social anxiety scales, including the Social Anxiety Scale (SAS; child version, SASC-R; LaGreca & Stone, 1993; adolescent version, SAS-A; LaGreca & Lopez, 1998), which measures fear of negative evaluation, social avoidance, and distress. These SAS subscales are useful and psychometrically robust (mostly with Caucasian and Latino samples), but do not assess social anxiety based on the Diagnostic Statistical Manual for Mental Disorders (DSM) nosology like the SPAI-C. And, as noted above, only the SPAI-C contains anxiety related physiological/somatic items. The SPAI-C also assesses clinical distress across various anxiety provoking situations (e.g., reading aloud, attending social events) as well as the cognitive aspects of anxiety before and during social interactions. Moreover, unlike other social phobia measures, this scale assesses the impact of different social contexts (e.g. interactions with adults vs. peers) and differentiates socially phobic children from those without psychiatric disorders and other externalizing disorders (Beidel, Turner, & Morris, 2000).

Exploring the Facets of Social Anxiety for African American and Caucasian Children

One way to explore the facets of social anxiety for African American and Caucasian children is by using cross-ethnic measurement invariance tests to determine if the SPAI-C assesses (non)equivalent information across these ethnic groups (Hui & Triandis, 1985; Knight & Hill, 1998; Vandenberg & Lance, 2000). In this thesis, the primary focus was on configural invariance, although other types of invariance are also important. Configural invariance refers to whether the same factors of a measure exist

across groups (Ghorpade, Hatstrup, & Lackritz, 1999; Millsap, 2011; Vandenberg & Lance, 2000). When it comes to the SPAI-C, Beidel, Turner, and Morris (1995) reported a three-factor model [i.e., (1) Assertiveness/General Conversation, (2) Traditional Social Encounters, and (3) Public Performance; see Appendix A] while Beidel, Turner, and Fink (1996) reported a five-factor model [i.e., (1) Assertiveness, (2) General Conversation, (3) Physical and Cognitive Symptoms, (4) Behavioral Avoidance, and (5) Public Performance; see Appendix B]. In the 1996 study, it was explained that whereas there was substantial item loading consistency between the three-factor and the five-factor solutions, sample to sample variations probably accounted for the differential findings (p. 239).

For this thesis, configural invariance testing was considered for a three- and five-factor model. Assuming that the five-factor solution was the best, for example, configural invariance of the SPAI-C meant that the five facets of social anxiety found in past research with Caucasian children [i.e., (1) Assertiveness, (2) General Conversation, (3) Physical and Cognitive Symptoms, (4) Behavioral Avoidance, and (5) Public Performance] are similarly found in African-American children, thereby indicating that both groups share the same concept of social anxiety. Conversely, lack of support for configural invariance would mean that some SPAI-C items do not load on the same anxiety factors for African American and Caucasian children. For instance, if the SPAI-C item “too scared to ask questions in class” loads on the Assertiveness factor scale rather than on the Public Performance factor scale as found in past research, then the SPAI-C would lack configural invariance. This might be the case, especially, for some African

American children and as a function of their self-esteem (Gray-Little & Hafdahl, 2000; Ramseur, 2004).

As noted earlier, other types of invariance also are important (i.e., metric, strong, and strict). Metric invariance refers to whether the items of a scale have the same meaning across groups (Labouvie & Ruetsch, 1995; Raykov, 2004), strong invariance refers to the level or severity of anxiety needed before a respondent endorses a given categorical item on a scale (Widaman & Reise, 1997), and strict invariance refers to the error or unexplained variance in the endorsement of an item (Byrne, Shavelson, & Muthén, 1989). Illustratively, the SPAI-C includes the item “When I am someplace (a party, school, soccer game, or anyplace where I will be with others) my heart beats fast.” For metric invariance, if African American children interpret heart beating fast as indicative of a chronic illness rather than anxiety (Ehlers, 1993), then this item would load differently across groups indicating lack of metric invariance. For strong invariance, the SPAI-C contains the item “I feel scared when answering questions in class when I know the answer”. If more assertiveness is needed in one group than the other for endorsement, then lack of strong invariance would be found. Since these types of invariance are contingent on finding support for configural invariance, the focus of this thesis was first on configural invariance.

The Present Thesis Study

In the proposed thesis study, symptom endorsement and social anxiety phenomenology in clinic-referred African American and Caucasian children was explored. Preliminary examination focused on identifying the most commonly endorsed SPAI-C social anxiety items for each ethnic group. In addition, particular attention was

paid to endorsement of somatic/physiological reactions for African American and Caucasian children separately, also based on the SPAI-C. Lastly, the configural invariance of the SPAI-C was examined to gauge similarities and possible differences in facet expression of social anxiety. To achieve these aims, data corresponding to a sample of 120 African American and 381 Caucasian children (ages 7- to 17-years old) referred for anxiety and who participated in past published research was used (Beidel et al., 2000; Beidel, Turner, and Young, 2006; Beidel et al., 2007).

Study Aims

Exploratory Aim 1: It was expected that differences would emerge in terms of the most common social anxiety symptoms between African American and Caucasian children. Based on past research, for African Americans, items from the Physical and Cognitive Symptoms factor scale (e.g., [items 25 and 26] rapid heartbeats and headaches when in social situations) might be endorsed more than items from other factor scales.

Exploratory Aim 2: It was expected that differences would emerge in the type of somatic/physiological symptoms endorsed by African American children compared to Caucasians. For example, based on past research with adults, rapid heartbeats might be endorsed more often among African Americans than among Caucasian children.

Exploratory Aim 3: It was expected that the five-factor structure [i.e., (1) Assertiveness, (2) General Conversation, (3) Physical and Cognitive Symptoms, (4) Behavioral Avoidance, and (5) Public Performance] would be replicated and invariant across the African American and Caucasian sample. There might be some variability in item loadings based on past research.

Chapter 2

METHOD

Participants

Data corresponding to a sample of 501 children (mean age = 11.62, $SD = 2.6$; range = 7 to 17; 249 girls) was used in this master's thesis. For this study, 120 children self-identified as African-American/Black and 381 children self-identified as Caucasian/White served as participants. Based on the Hollingshead Classification System (Hollingshead & Read, 1958), 50% of the sample was classified as middle class families. Based on the Anxiety Disorders Interview Schedule for Children (ADIS-C; Silverman & Albano, 1997), 188 (39.8%) children were labeled as typically developing (with no diagnosis), 230 (48.7%) met criteria for social anxiety disorder, 36 (7.6%) met criteria for other anxiety disorders (e.g., generalized anxiety disorder, separation anxiety disorder, specific phobia), and 18 (3.8%) met criteria for other disorders (e.g., autism, Attention deficit hyperactivity disorder).

Measure

Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel et al, 1995). Social Phobia and Anxiety Inventory for Children (SPAI-C) was developed by Beidel, Turner, and Morris (1995) and assesses how anxious children feel in certain situations. The SPAI-C is used with children between 8- to 17-years-old. A three-factor model as well as a five-factor model has been reported (see Introduction). The SPAI-C consists of 26 items reflecting anxiety provoking social situations and children respond by endorsing how often each situation would be associated with one or several anxious responses. Each item is rated using a 0 (never or hardly ever), 1 (sometimes), or 2 (most of the time or

always) response scale. In addition, 16 of the 26 SPAI-C items have multiple responses to assess social anxiety symptoms in different social contexts (e.g., peers they know; peers they do not know; adults). Scores can range from 0 to 78. A 2-week retest reliability and 10-month test-retest reliability estimate of .86 has been found. A .95 Cronbach's alpha internal consistency estimate for the SPAI-C's total social anxiety scale has been reported in past published research (Beidel et al., 1995). The SPAI-C also has demonstrated convergent validity with other self-report measures of social anxiety (e.g., Social Anxiety Scale for Children Revised, $r = .63$; Morris & Masia, 1998), trait anxiety (State-Trait Anxiety Inventory for Children, $r = .50$), and fear (Fear Survey Schedule for Children-Revised, $r = .53$; Beidel et al., 1995). The SPAI-C correlates significantly with parent reports of internalizing problems on the CBCL Internalizing scale ($r = .45$).

Procedure

Participants in this study were recruited through referrals from mental health professionals (e.g., pediatricians, social workers, psychologists) as well as media announcements (e.g., newspaper, radio, television, flyers at schools and libraries). After parents signed consent forms and children provided assent, children completed the SPAI-C as part of a comprehensive assessment battery.

Data Analytic Plan

First, missing data was examined with descriptive statistics. Specifically, missing data was explored at the measure level and was examined to see if missingness was related to any of the demographic variables. Next, descriptive statistics was used to examine similarities and differences along social fears endorsed by African American and Caucasian children. For these descriptives, the focus was on mean intensity ratings

on each of the 26 SPAI-C items. These descriptive statistics also helped to assess possible similarities and differences in the content of the ten most common social fears reported between African American and Caucasian children.

To evaluate configural invariance, an optimal measurement model for the SPAI-C based on symptom endorsement along social anxiety between African American and Caucasian children were estimated using confirmatory factor analyses (CFA). Then measurement invariance (MI) analyses were used to estimate the cross-ethnic invariance of the SPAI-C via nested multi-group CFA. Specifically, initial examination of MI testing started with configural analysis, which examined the overall model fit and significance of factor loadings for a multi-group model with no constraints across the groups of interest (i.e., ethnicity/race). Therefore, the first step was to establish whether the three-factor or five-factor solution found in past research with the SPAI-C was viable in the overall sample. The CFA verified if the model offered good fit between African Americans and Caucasians. For example, to evaluate configural invariance in the MI analysis, the model fit was evaluated on the basis of a majority of fit indexes (Gordon & Rensvold, 2002). The model was considered to have “good fit” if the comparative fit index (CFI) was $\geq .95$ (or $.90$ for adequate fit), the root mean square error of approximation (RMSEA) was $\leq .06$ (or $.08$ for adequate fit), and the standardized root mean square residual (SRMR) was $\leq .08$ (or $.10$ for adequate fit; Hu & Bentler, 1999; Weston & Gore, 2006). Finally, both model identification and MI testing procedures recommended by Millsap and Tein (2004) for ordinal categorical variables were employed.

The second step was to examine the factorial invariance of the SPAI-C. Through a CFA model, configural invariance was measured by allowing a set of items to form a factor in one group while allowing other parameters to vary across groups. Factor analysis was also used for the discrete items in the SPAI-C. Specifically, the configural model was estimated by (a) setting the first item loading for each of the factors to be equal across groups, (b) setting the thresholds for the first item of the factors to be equal across groups, (c) constraining the first threshold for each categorical item to be equal across groups, (d) fixing the factor means to zero for Caucasian children, (e) fixing the latent intercepts to zero in both groups, and (f) setting the unique item residuals to one (Millsap & Yun-Tein, 2004). If configural invariance was established, then this model where factor loadings were allowed to vary was compared to a more constrained model (i.e., metric invariance) where the factor loadings were invariant across group. Therefore, configural invariance was evaluated on both the overall fit of model and the significance of the item factor loadings.

Although there was no established rule for the sample size needed to conduct CFA, it has been recommended by Tabachnick and Fidell (2007) that an overall sample of at least 300 cases is adequate. Because the overall sample for this thesis study was over 300 cases, the data was assumed suitable for factor analyses within a nested multi-group model. Also, a weighted least squares mean variance (WLSMV) estimator for CFA analyses was used because SPAI-C has a 3-point response scale. The WLSMV also was used because it is robust to violations of normality (Flora & Curran, 2004) along with theta parameterization in Mplus (Muthén & Muthén, 2006). As mentioned before, the SPAI-C has 16 items with multiple responses to assess social anxiety symptoms in

different social contexts. For these items with multiple responses, an average was computed across the sub-categories and the overall mean for the specific item was used in the CFA analyses.

Chapter 3

RESULTS

Preliminary Analyses

Missing data were first identified at the measure level for the SPAI-C. This was examined because the SPAI-C manual (Beidel, Turner, & Morris, 1998) cautions against calculating a total score when there are three or more items missing. As a result, missingness was tested for bias by creating a dummy variable for individuals who would be considered to have missing data when three or more items were missing (e.g., 1 = missing, 0 = not missing). Descriptive statistics were conducted to identify the number of children with missing data on the SPAI-C. Of the 501 children in the original sample, 471 participants (94%) did not have missing data because they had two or fewer items missing while 30 participants (6%) had missing data because three or more items were missing. Therefore, a dummy code was created to identify the 471 participants as not having missing data while the 30 participants were classified as having missing data.

The dummy variable for the SPAI-C was then correlated with the demographic variables of race, age, gender, SES, and ADIS diagnoses to determine if there was an association. Because four demographic variables (i.e., race, gender, SES, and ADIS diagnoses) were categorical, chi-square test of independence was also conducted between the group members with complete data and incomplete data, but no significant results were found. For the one continuous variable of age, a t-test was conducted to compare missingness, and there were no significant results. Overall, individuals who had missing data (i.e., when three or more items were missing from the SPAI-C) did not differ by any of the demographic variables examined (i.e., race, age, gender, SES, and ADIS

diagnoses). Because of the non-significant results for missing data, only children with two or fewer items missing was included in the subsequent analyses. This reduced the sample to 471 children (African Americans $n = 107$; Caucasian $n = 364$).

Within the reduced sample of 471 children, there were missing data for the following three demographic variables: age ($n = 1$, 0.2%), ADIS diagnoses ($n = 13$, 2.8%), and SES ($n = 273$, 58.0%). In particular, African American children had missing data on SES ($n = 56$, 52.3%) and ADIS diagnoses ($n = 1$, 0.9%). However, African American children had no missing data on age (see Table 1). Because this sample comes from multiple studies that used the SPAI-C as a comprehensive assessment battery for social anxiety, each participant completed the SPAI-C, but the same demographic information (e.g., SES) was not obtained for everyone.

In addition, t-test and chi-square tests were used to determine if there were any differences on the demographic variables by race and total SPAI-C scores (see Table 1). An independent-sample t-test was conducted to compare age between African American and Caucasian children. There was a significant difference in age between Caucasian ($M = 11.45$, $SD = 2.59$) and African American children ($M = 12.39$, $SD = 2.50$; $t(468) = -3.32$, $p = .001$). African American children were significantly older than Caucasian children. An independent-sample t-test was also conducted to compare the total SPAI-C scores between African American and Caucasian children, but there were no significant differences between African American ($M = 16.64$, $SD = 12.33$) and Caucasian children ($M = 17.01$, $SD = 12.03$).

Next, chi-square tests of independence were conducted to determine if significant differences by race were found with the categorical demographic variables. A chi-square

test for independence (with Yates Continuity Correction) indicated no significant association between race and gender, $\chi^2 (1, n = 471) = .40, p = .53$. However, SES status was not equally distributed between African American and Caucasian children, $\chi^2 (2, n = 198) = 7.29, p = .03$. Although the African American and Caucasian families in this study were more likely to be middle class (i.e., 43% and 53%, respectively), African American families were more likely to be in the lower SES (31%) than Caucasian families (14%). A chi-square test for independence also indicated a significant association between race and ADIS diagnoses, $\chi^2 (3, n = 458) = 13.66, p = .003$. For the most part, African American children were more likely to not receive a diagnosis and be classified as “typically developing” (49%) than Caucasian children (37%). In addition, African American children were less likely to be diagnosed with another anxiety disorder that was not social anxiety (2%) or a non-anxiety disorder (0%) compared to Caucasian children (9% and 5%, respectively). As a result, one cell violated the assumption of a minimum expected cell frequency because there were less than five African American children who met criteria for other anxiety disorders (see Table 1). Also, a chi-square test for independence (with Yates Continuity Correction) indicated no significant association between race and the SPAI-C cut-off score of eighteen, $\chi^2 (1, n = 471) = .82, p = .37$. There was 61% ($n = 65$) of the African American and 55% ($n = 201$) of the Caucasian children who were below the SPAI-C cut-off score while 39% ($n = 42$) of the African American and 45% ($n = 163$) of the Caucasian children were above the SPAI-C cut-off score.

Exploratory Aim 1: Top 10 Social Fears

To explore the first aim, mean intensity rating scores were compared to determine the top 10 endorsed items by African American and Caucasian children and evaluate the similarities and differences of these social anxiety fears (see Table 2). Seven of the ten social fear items were the same for African American and Caucasian children (i.e., items 12b, 16b, 2, 18b, 4, 17b, 10c). The items that were similar rated by both groups broadly focused on being assertive in difficult situations and speaking in front of large groups of peers that they do not know.

However, three items that were part of the top 10 social fears for African American children (i.e., items 23, 24b, and 16c) were not part of the top 10 social fears for Caucasian children (i.e., items 12c, 13c, and 18c). These three unique items for African American children broadly focused on speaking in front of adults (item 16), not initiating conversations (item 23), and wondering what others think of them (item 24). The other unique three items for the Caucasian children broadly focused on feeling bad, ignored, or embarrassed within the context of interacting with adults.

A chi-square test of independence was then performed to examine the association between race and the top 10 mean intensity ratings. The proportion of mean intensity ratings for each of the seven items that were similar did not differ by race. Next, six chi-square tests were performed to examine the three unique items highly endorsed by African American children as well as the other three unique items endorsed by Caucasian children. Of these six chi-square tests performed for the unique items, only item 12c was significantly different by race. A chi-square test for independence indicated a significant association between race and item 12c, $\chi^2(2, n = 471) = 6.40, p = .04$. Caucasian

children were more likely to endorse item 12c than African American children. Item 12c is about feeling embarrassed in front of adults when they are in a situation and do not know what to do. In particular, 42% of Caucasian children endorsed item 12c as “sometimes” compared to 32% of African American children. In addition, 46% of African American children said that item 12c “never or hardly ever” happened to them compared to 33% of Caucasian children. With these different levels of endorsement by race, item 12c had a higher mean intensity rating for Caucasian children than African American children. The other five unique items endorsed differently between African American and Caucasian children were not proportionally different between the two groups.

Exploratory Aim 2: Physiological Symptoms of Social Fears

Next, the mean intensity ratings for physiological symptoms were examined to determine if the proportion of African American children who endorsed physiological symptoms are the same as the proportion of Caucasian children. Mean intensity ratings were calculated by finding the group mean for each item regarding physiological symptoms: 25a, 25b, 25c, 25d, 25e, 26a, 26b, 26c, 26d, and 26e. Of these 10 physiological items asked within the SPAI-C, only item 26b was significant. This item is about shaking during a social situation. A chi-square test for independence indicated a significant association between race and item 26b, $\chi^2(2, n = 471) = 8.95, p = .01$. Although 75% of the Caucasian sample and 76% of the African American sample reported they “never or hardly ever” shake during a social event, 11% of African American children were more likely to report shaking “most of the time or always” during a social situation compared to 4% of Caucasian children.

Exploratory Aim 3: Cross-Ethnic Measurement Invariance

Measurement invariance was examined within a nested multi-group model in Mplus (Muthén & Muthén, 2006). However, a CFA for a five-factor model did not demonstrate good fit indices for the African American or Caucasian group. The five-factor model did not hold when the CFA was compared separately in each racial group within a five-factor model or within a multi-group model. In particular, the five-factor model for African American group could not be found because the results indicated that the factor covariance matrix was not positive definite for the SPAI-C factors of Avoidance and General Conversations. This could mean that there was a linear dependency between these two latent factors, which caused the correlations among the five factors to be greater than one. A three-factor model was also compared because the SPAI-C also demonstrated a three-factor model in a previous study Beidel et al. (1995), but good fit indices were not found for the African American or Caucasian sample. As a result of not finding a good model with three of five factors, a baseline model could not be confirmed with all of the factors examined simultaneously. Instead, these factors were examined separately to find an optimized baseline model despite possible sample size problems.

Because the published 5-factor model was of interest to this study and has been identified in other studies, these five factors were examined separately due to the sample size and the number of items in the scale (Bentler & Chou, 1987; Jackson, 2003). Conducting single-factor CFAs is less demanding for small sample sizes. Therefore, single-factor models were examined for each of the five factors for measurement invariance.

The first step of measurement invariance was configural invariance, where the overall model fit and significance of the factor loadings were examined in the model without any constraints across the Black and White children. However, Assertiveness was the only factor that was partially supported at the configural invariance level [χ^2 (28, $N = 471$) = 58.42, $p < .001$; CFI = 0.94; RMSEA = .07]. Although the chi-square result was significant, suggesting a poor model fit, the other fit indices (i.e., CFI and RMSEA) suggested an adequate fit of the data (see Table 3).

The other four factors (i.e., General Conversations; Physical and Cognitive Symptoms; Avoidance; Public Performance) did not have an optimal baseline model at the configural level, so modification indices were used to find an acceptable baseline model. Using the suggested modification indices in Mplus (Muthén & Muthén, 2006), certain pairs of unique factors were allowed to covary at the configural level. Then the models for these four factors demonstrated a good fit to the data.

In order for the General Conversation factor to have a good model fit, items 14 and items 15 (see Table 4) within the second factor of General Conversation were allowed to covary [χ^2 (2, $N = 471$) = 0.32, $p = .85$; CFI = 1.00; RMSEA = .00]. Item 14 asked students if they feel scared when they start to talk to a) boys and girls they know, b) boys and girls they do not know, and c) adults. Item 15 asked if they feel scared if they have to talk for longer than a few minutes to a) boys and girls they know, b) boys and girls they do not know, and c) adults.

As shown in Table 5, the third factor of Physical and Cognitive Symptoms demonstrated a good fitting model at the configural level when items 25 and 26 were allowed to covary [χ^2 (2, $N = 471$) = 2.621, $p = .27$; CFI = 1.00; RMSEA = .04, SRMR =

0.004]. Item 25 is a statement regarding experiencing physiological symptoms before a social event while item 26 is regarding experiencing physiological symptoms during a social event. Also, the CFA analysis conducted for this factor was different than the other four factors. For the other four factors, the WLSMV was used to estimate the single-factor model because the SPAI-C has categorical items on a 3-point response scale. Furthermore, WLSMV can only be used when at least one or all the items in a model are categorical. However, all of the four items within the Physical and Cognitive Symptoms factor had multiple responses, which became continuous variables when the multiple responses were averaged into their respective item. Each item with multiple responses was averaged because this approach was used in previous factor analyses with the SPAI-C (Beidel et al, 1995; Beidel et al., 1996). Because one categorical variable has to be present in a model to use the WLSMV estimator in Mplus, the Maximum likelihood estimator was used. Maximum Likelihood only works when all of the variables in a model are continuous, which is the reason this approach was not used with the other four factors because at least one categorical variable loaded on the other factors. Also, the SRMR was an additional fit statistic provided in Mplus because each of the four items in the third factors was a continuous variable.

As shown in Table 6, the Avoidance factor demonstrated a good fitting model at the configural level when items 19 and 20 were allowed to covary [$\chi^2(2, N = 471) = 0.10$, $p = .95$; CFI = 1.00; RMSEA = .00]. Items 19 and items 20 are also similar questions, but item 19 is regarding trying to avoid attending a social situation while item 20 is regarding leaving a social situation.

As shown in Table 7, the Public Performance Factor demonstrated a good fitting model when items 5 and 16 were allowed to covary [$\chi^2(2, N = 471) = 2.82, p = .24$; CFI = 1.00; RMSEA = .04]. Item 4 is feeling scared when speaking or reading in front of a group of people, while item 16 is scared about speaking (giving a book report, reading in front of the class) in front of a) boys and girls they know, b) boys and girls they do not know, and c) adults.

Because configural invariance was found, metric invariance was the next level of measurement invariance examined. At this level, the loadings were made to be equal across both the African American and Caucasian groups. All of the five factors revealed good fit indices for metric invariance. These results are shown in Tables 3 to 7.

Strong invariance was the third level of measurement invariance examined by making both the loadings and intercepts/thresholds equal across groups. The five factors of the SPAI-C also revealed good fit indices. These results are also reported in Tables 3 to 7.

Strict invariance was the fourth level of measurement invariance examined. A fully constrained model was examined by making the loadings, intercepts/thresholds, and residual variances equal across both racial groups. All of the fit indices were good for each factor except for the Physical and Cognitive Symptoms factor (see Table 5). In particular, the Physical and Cognitive Symptoms factor had a significant chi-square [$\chi^2(12, N = 471) = 21.29, p = .05$] suggesting a possible poor fit, but the other three fit indices suggest a good fit [CFI = 0.99; RMSEA = .06, SRMR = 0.05]. The other four factors demonstrated good fit indices. The first factor of Assertiveness (see Table 3) and the second factor of General Conversations (see Table 4) revealed good fit indices [$\chi^2(47,$

$N = 471$) = 51.01, $p = .32$; CFI = .99; RMSEA = .02; $\chi^2(12, N = 471) = 12.96, p = .37$; CFI = 1.00; RMSEA = .02, respectively]. The fourth factor of Avoidance (see Table 6) and the fifth factor Performance (see Table 7) also revealed good fit indices [$\chi^2(14, N = 471) = 11.22, p = .51$; CFI = 1.00; RMSEA = .00; $\chi^2(12, N = 471) = 18.03, p = .11$; CFI = 1.00; RMSEA = .05, respectively]. Factor means were also examined for each of the separate five factors of the SPAI-C. At the strict level of measurement invariance, none of the factor means were significantly different between the Caucasian and African American children. In addition, the significant unstandardized factor loadings for each of the individual five factors for the strict level of measurement invariance are shown in Table 8. Although these five factors were each analyzed separately through a single-factor analysis, the loadings of these five factors are presented together in Table 8.

Chapter 4

DISCUSSION

The purpose of this thesis was to explore similarities and differences in social anxiety symptoms among clinic-referred African American and Caucasian children based on the SPAI-C (Beidel et al., 1995). For the most commonly endorsed items, African American and Caucasian children shared seven of the top 10 most commonly identified social anxiety symptoms. Similar social fears across ethnicity focused on “assertiveness in situations perceived to be difficult” and “speaking to large groups of peers they do not know.” Findings also showed that African American children were more likely to report symptoms of “shaking when in social situations” than Caucasian children, but this was on the basis of one item (i.e., 26b). In addition, Caucasian children were more likely to report symptoms of “embarrassment when in front of adults” compared to African American children, but this was also on the basis of one item (i.e., 12c). When it came to the five factors of the SPAI-C, results showed measurement invariance across African American and Caucasian children. Taken together, there were more similarities than differences in social anxiety symptoms between African American and Caucasian children, at least based on the SPAI-C.

The SPAI-C Appears to be a Cultural Robust Measure for Assessing Anxiety in African American Children. Based on the results of this study, measurement invariance across African American and Caucasian children was found for anxiety symptoms as measured by the SPAI-C. Finding support for the measurement invariance of the SPAI-C suggests that past research showing similar (or lower) social anxiety symptom endorsement for African American compared to Caucasians is likely “true” rather than

due to measurement bias (Beidel et al., 1999; Beidel et al., 2000; Ferrell et al., 2004).

This conclusion was reached based on results from analyses that focused on configural, metric, strong, and strict invariance.

In the present study, invariance tests focused on each of the five SPAI-C factors [i.e., (1) Assertiveness, (2) General Conversation, (3) Physical and Cognitive Symptoms, (4) Behavioral Avoidance, and (5) Public Performance], which were examined separately. This approach was pursued because the traditional 5-factor structure was not replicated in the initial configural invariance tests conducted. Examining each of the five factors in separate models was deemed appropriate for several reasons. First, given the sample size in this study, conducting single-factor analyses was less demanding on sample size requirements (i.e., the African American sample was comprised of 107 children). Second, past research focusing on other culturally diverse child populations (e.g., Brazilian, Norwegian, Italian, and Finnish) have confirmed the five-factor structure of the SPAI-C (Aune, Stiles, & Svarva, 2008; Gauer, Picon, Vasconcellos, Turner, & Beidel, 2005; Kuusikko, et al., 2009; Ogliari et al., 2012) and although African American children are not culturally homogenous to these other groups, it is possible that in a larger sample the five factor solution would emerge for African American children. Third, when each factor was tested separately, fit indices were adequate after minor model modifications were made (i.e., two items were allowed to covary on four of the five factors, for a total of 8 items). Under these conditions, it can be concluded that the SPAI-C showed cross-ethnic measurement invariance across African American and Caucasian children. This knowledge is important because the SPAI-C is among the most widely used child anxiety measures and is the most widely used social anxiety measure in the

clinical child area (Tulbure, Szentagotai, Dobrean, & David, 2012). In addition, with anxiety being a highly prevalent child problem (Kessler, Ruscio, Shear, & Wittchen, 2010) and African Americans being underrepresented in the child anxiety research literature (Hunter, & Schmidt, 2010; Neal, & Turner, 1991), knowledge from this study can serve as stepping stones for future child anxiety research in this ethnic minority population.

African American and Caucasian children appear to be more similar than different. African American and Caucasian children were not significantly different in terms of their SPAI-C mean anxiety total scores, the proportion of children in the clinical range (using the 18 cutoff score), or in their mean intensity ratings for seven of the top 10 social fears based on the SPAI-C. These results contrast with only a handful of studies focusing on social anxiety among African American children. In particular, comparative studies using other types of social anxiety scales (e.g., Social Anxiety subscale of the MASC; SAS-A) have shown that African American children had significantly lower levels of social anxiety than Caucasian children (Compton et al., 2000; Nishina et al., 2010). When it comes to the SPAI-C, however, our findings are consistent with research showing no significant cross-ethnic differences (Beidel et al., 1999; Beidel et al., 2000; Ferrell et al., 2004). As mentioned in the Introduction, the lack of physiological/somatic items within other types of social anxiety measures may have reduced sensitivity to identify social anxiety in African American children, who may experience their anxiety largely through physical symptoms (Neal & Turner, 1991). Because there are six physiological/somatic symptoms in the SPAI-C (i.e., sweating, heart beating, headaches,

stomachache, shaking, and having an urge to go to the restroom), SPAI-C findings are likely more representative of the anxiety experience with African American children.

Only a few differences emerged when comparing African American and Caucasian children. Two items (i.e., items 12c and 26b) were significantly different by race. The wording of item 12c, “I feel scared and don’t know what to do when in an embarrassing situation (embarrassed means that your face gets hot and red) with a boy or girl my age who I don’t know”, may yield lower endorsement by African American compared to Caucasian children. For African Americans, this item may not be meaningful since African American children with darker skin tones might not show color changes (red) in their face, even if they are “blushing” (Konotey-Ahulu, 2003). In fact, Simon and Shield (1996) found that 77% of darker complexioned university students (i.e., African Americans/Blacks) described “blushing” as “face gets hot, but doesn’t change color” while lighter complexioned university students (i.e., Caucasians, Hispanics, and Asians) were more likely to report blushing as their “face gets hot and changes colors.” Since asking African Americans whether “your face gets hot and red,” (i.e., item 12c) may not be equally relevant, future revisions of the SPAI-C (or other measures) should include “face gets hot” to possibly increase the cultural sensitivity of the measure.

Item 26b also had a higher proportion of African American than Caucasian children reporting that they shake “most or all the time” when they are in a social situation with boys and girls they do not know. Although, the reason for this higher frequency endorsement of shaking in African American children is unknown, others have reported no difference between African American and Caucasian adults in endorsing

items that referred to “shaking” (i.e., Heertin-Roberts et al., 1997). It is thus important for future research to investigate if differences in somatic symptom of shaking between African American and Caucasian children can be replicated.

Limitations

The results of this study should be viewed in light of a few limitations. First, since the five factors were examined separately, the results of measurement invariance do not suggest that the 5-factor structure was confirmed. Single-factor CFAs do not account for the possible associations among the five factors (because the factors were examined separately) as well as if certain SPAI-C items have strong associations with more than one factor. Second, although there is no clear definition of a sample size needed to conduct CFAs, Tabachnick and Fidell (2007) recommended having a sample size of 300, which was the overall sample size of this current study. However, the sample size of the African American children was well below 300 cases. As such, the small sample size for the African American children could have inhibited the study’s ability to confirm fit at the configural level of measurement invariance without using the modification indices. Future studies, therefore, should aim at exploring measurement invariance with a larger African American sample. Third, in the present study, some of the participants were excluded because they had missing data on three or more items. Although the SPAI-C manual (Beidel et al., 1998) cautions calculating total scores for respondents with three or more items missing, missing data procedures such as multiple imputations could have addressed this issue. However, since none of the variables included in this study had strong auxiliary variables to perform these quantitative strategies (Collins, Schafer, & Kam, 2001), this approach was not pursued.

Fourth, there were a higher proportion of African American families classified as “lower class” based on the Hollingshead Classification System compared to Caucasians. There were also a higher proportion of Caucasian families classified as higher SES than African American families. When examining race collectively and separately, the majority of African American and Caucasian families were of middle class SES. On the one hand, findings might be representative of lower and middle class African American families, but on the other hand, African Americans who are in the higher SES were not represented in this study. As such the degree to which these findings extend to African Americans from higher SES strata remains to be examined.

Clinical Implications and Future Research Directions

Based on these findings, clinicians are encouraged to use the SPAI-C with African American children. Results suggest that SPAI-C scores are generally unbiased with similar endorsement of social anxiety symptoms between African American and Caucasian children. Although the SPAI-C showed measurement invariance with the five factors separately, clinicians also could assess African American children’s social anxiety by using SPAI-C Total scores. Since the SPAI-C has been identified as one of the most important and empirically supported evidenced-based assessments tools for screening and for ascertaining treatment outcome (Tulbure et al., 2012), findings from this thesis can help clinicians who serve children in general and African Americans in particular.

In future studies, age, gender, and referral process should be considered. These variables were not examined in this study. When the SPAI-C was created, no significant differences in SPAI-C scores were found between children (i.e., 12 years and younger) and adolescents (i.e., 13 years and older; Beidel et al., 1995). Also, since social anxiety

generally emerges in adolescence, examining age in this study would support if social situations change symptom endorsement during these developmental periods. In regards to gender, some studies suggest girls are more likely to meet criteria for social anxiety than boys (Rapee & Spence, 2004). However, equal proportion of males and females seek services for social anxiety, which may make social anxiety rates similar in clinic samples (Rapee, 1995). There also is a possibility that differences in social anxiety symptom endorsement might emerge for girls compared to boys. For example, girls may be more willing to share their social fears than boys due to gender roles. However, the small sample size in this study does not allow for examining gender by race. This is a possibility that warrants future research, particularly by focusing on the items that were non-invariant across race groups. African American families in this study were clinic-referred, and Algeria et al. (2012) found that in a national epidemiological study African Americans adolescents were less likely to receive services for internalizing problems compared to Caucasian adolescents when they were un-identified and not encouraged to seek services. As such, the SPAI-C should be used to help identify potential African American children with social anxiety symptoms, and future studies should continue to include this scale to learn more about social anxiety in African American children.

Table 1

Sample Characteristics as Means, Frequency, and Percentage of Sample by Race

Characteristic	African American (<i>n</i> = 107)	Caucasian (<i>n</i> = 364)	Total (<i>n</i> = 471)
Gender			
Boys	50(47%)	185(51%)	235(50%)
Girls	57(53%)	179(49%)	236(50%)
Age**			
	<i>M</i> = 12.39 (<i>SD</i> = 2.50)	<i>M</i> = 11.45 (<i>SD</i> = 2.59)	<i>M</i> = 11.67 (<i>SD</i> = 2.59)
Total SPAI-C Score			
	<i>M</i> = 16.64 (<i>SD</i> = 12.33)	<i>M</i> = 17.01 (<i>SD</i> = 12.03)	<i>M</i> = 16.93 (<i>SD</i> = 12.08)
Socioeconomic Status*			
Upper Class	13(26%)	48 (32%)	61(31%)
Middle Class	22(43%)	78(53%)	100(51%)
Lower Class	16(31%)	21(14%)	37(19%)
ADIS Diagnosis**			
No Diagnosis/Typically Developing	52(49%)	131(37%)	183(40%)
Social Anxiety	52(49%)	172(49%)	224(49%)
Other Anxiety Disorder	2(2%)	33(9%)	35(8%)
Non-Anxiety Disorder	0(0%)	16(5%)	16(4%)

p* < .05, two-tailed. *p* < .01

a = significant

Table 2

Top Ten Social Anxiety Items with Mean Intensity Ratings between African American and Caucasian Children

<i>African American (n = 107)</i>				<i>Caucasian (n = 364)</i>			
Item #	SPAI-C Item	<i>M</i>	<i>SD</i>	Item #	SPAI-C Item	<i>M</i>	<i>SD</i>
12B	...in embarrassing situation with a boy or girl I don't know	.97	.77	16B	...speaking in front of boys or girls my age that I don't know	.99	.79
16B	...speaking in front of boys or girls my age that I don't know	.96	.81	4	...speaking or read in front of a group of people	.97	.79
2	...I become the center of attention	.94	.77	12B	...in embarrassing situation with a boy or girl I don't know	.96	.77
23	I usually do not speak to anyone until they speak to me	.93	.82	10C ^a	If an adult starts arguing with me	.96	.80
18B	...ignored or made fun of by boys or girls I don't know	.92	.80	18B	ignored or made fun of by boys or girls I don't know	.95	.80
24B	Sometimes I think what are they thinking of me?	.89	.74	17B	...in an school activity (e.g., choir, play) in front of boys or girls that I don't know	.94	.79
4	...speaking or read in front of a group of people	.87	.75	12C*	in an embarrassing situation with an adult	.93	.76
17B	...in an school activity (e.g., choir, play) in front of boys or girls that I don't know	.85	.83	2	...I become the center of attention	.92	.77
10C	If an adult starts arguing with me	.83	.82	13C ^a	an adult says something I think is wrong, I'm scared of saying what I think	.90	.80
16C	...speaking in front of adults	.83	.79	18C	ignored or made fun of by adults	.89	.82

Note. Items presented in table were condensed for ease of presentation.

^an = 363

*p < .05, two-tailed. **p < .01

Table 3

Model Fit Indices for Factor 1: Assertiveness

Model/description	χ^2	df	p value	RMSEA	95% CI	CFI
Model 1: configural invariance (same pattern of loadings)	58.42	28	.0006	0.07	[0.04,0.09]	0.94
Model 2: metric invariance (equal factor loadings)	36.93	33	.29	0.02	[0.00,0.05]	0.99
Model 3: strong factorial invariance (equal factor loadings and thresholds)	38.59	40	.53	0	[0.00,0.04]	1
Model 4: strict factorial invariance (equal factor loadings, intercepts, and error variances)	51.01	47	.32	0.02	[0.00,0.05]	0.99

Note. RMSEA = root mean square error of approximation; CFI = comparative fixed index.

Table 4

Model Fit Indices for Factor 2: General Conversations

Model/description	χ^2	df	p value	RMSEA	95% CI	CFI
Model 1: configural invariance (same pattern of loadings) ^a	0.32	2	.85	0.00	[0.00,0.071]	1.00
Model 2: metric invariance (equal factor loadings)	6.14	5	.29	0.03	[0.00,0.10]	1.00
Model 3: strong factorial invariance (equal factor loadings and thresholds)	8.51	8	.39	0.02	[0.00,0.08]	1.00
Model 4: strict factorial invariance (equal factor loadings, intercepts, and error variances)	12.96	12	.37	0.02	[0.00,0.07]	1.00

Note. RMSEA = root mean square error of approximation; CFI = comparative fixed index.

^a= items 14 and 15 were allowed to covary. Items 13 and 16 were deleted because these items also loaded on Factor 5, but the loadings were higher in Factor 5.

Table 5

Model Fit Indices for Factor 3: Physical and Cognitive Symptoms

Model/description	χ^2	df	p value	SRMR	RMSEA	95% CI	CFI
Model 1: configural invariance (same pattern of loadings) ^a	2.62	2	.27	0.004	0.04	[0.00,0.14]	1.00
Model 2: metric invariance (equal factor loadings)	11.41	5	.04	0.04	0.07	[0.01,0.13]	1.00
Model 3: strong invariance (equal factor loadings and thresholds)	15.15	8	.06	0.04	0.06	[0.00,0.11]	1.00
Model 4: strict invariance (equal factor loadings, intercepts, and error variances)	21.29	12	.05	0.05	0.06	[0.01,0.10]	0.99

Note. SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fixed index.

^a= items 25 and 26 were allowed to covary

Table 6

Model Fit Indices for Factor 4: Avoidance

Model/description	χ^2	df	p value	RMSEA	95% CI	CFI
Model 1: configural invariance (same pattern of loadings) ^a	0.10	2	.95	0.00	[0.00,0.00]	1.00
Model 2: metric invariance (equal factor loadings)	4.15	5	.53	0.00	[0.00,0.08]	1.00
Model 3: strong factorial invariance (equal factor loadings and thresholds)	8.51	8	.42	0.02	[0.00,0.08]	1.00
Model 4: strict factorial invariance (equal factor loadings, intercepts, and error variances)	11.22	12	.51	0.00	[0.00,0.06]	1.00

Note. RMSEA = root mean square error of approximation; CFI = comparative fixed index.

^a= items 19 and 20 were allowed to covary.

Table 7

Model Fit Indices for Factor 5: Public Performance

Model/description	χ^2	df	p value	RMSEA	95% CI	CFI
Model 1: configural invariance (same pattern of loadings) ^a	2.82	2	.24	0.04	[0.00,0.14]	1.00
Model 2: metric invariance (equal factor loadings)	6.82	5	.23	0.04	[0.00,0.11]	1.00
Model 3: strong factorial invariance (equal factor loadings and thresholds)	12.20	8	.14	0.05	[0.00,0.10]	1.00
Model 4: strict factorial invariance (equal factor loadings, intercepts, and error variances)	18.03	12	.11	0.05	[0.00,0.87]	1.00

Note. RMSEA = root mean square error of approximation; CFI = comparative fixed index.

^a= items 5 and 16 were allowed to covary.

Table 8

Unstandardized Factor Loadings for the Strict Level of Measurement Invariance

SPAI-C Item #	Factor 1: Assertiveness	Factor 2: General Conversation	Factor 3: Physical and Cognitive Symptoms	Factor 4: Avoidance	Factor 5: Public Performance
11 ^a	1.00				
18 ^a	1.08				
13 ^a	0.99				
10 ^a	0.95				
12 ^a	1.02				
8	1.76				
17 ^a	0.95				
14 ^a		1.00			
15 ^a		1.02			
7		3.22			
1		3.05			
26 ^a			1.00		
25 ^a			1.15		
24 ^a			1.76		
21 ^a			1.72		
19 ^a				1.00	
20 ^a				0.87	
6				3.71	
2				2.11	
16 ^a					1.00
5					3.14
4					3.39
3					3.35

a = Items 9, 22, 23 were excluded from analysis because they were not part of the 5-factor study Beidel, Turner, and Fink (1996).

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APPENDIX A

ITEMS WITHIN A THREE-FACTOR MODEL FOUND IN BEIDEL ET AL. (1995)

Factor 1 – Assertiveness

Scared if someone says something that is wrong or bad
Scared in an embarrassing situation
Scared if someone asks me to do something that I don't want to do
Scared when ignored or made fun of by others
Scared if someone starts arguing
Scared when I start to talk to someone
When I am with other people, I think "scary" thoughts
Before going to a party, I think about what might go wrong
Too scared to ask questions in class
Scared in the school cafeteria
I have to talk for longer than a few minutes
Try to avoid social situations
Scared when becoming the center of attention

Factor 2 – Traditional Social Encounters

When I am in a social situation, I feel (somatic symptoms)
Before going someplace, I feel (somatic symptoms)
Scared at parties, dances, school...and go home early
I leave social situations
I avoid social situations (parties, school, playing with others)
Scared in a school play, choir music, or dance recital
Before going to a party, I think about what might go wrong
When I am with other people, I think "scary" thoughts
I feel scared in the school cafeteria

Factor 3 – Public Performance

Scared when speaking or reading aloud in front of a group
Scared when speaking in front of the class
Scared when I have to do something while others watch me
Scared when answering questions in class or at group meetings
Scared when in a school play, choir, music, or dance recital
Scared when with others and become the center of attention
Scared when joining a large group

APPENDIX B

ITEMS WITHIN A FIVE-FACTOR MODEL FOUND IN BEIDEL, TURNER, AND
FINK (1996)

Factor 1 – Assertiveness

Scared if someone asks me to do something that I don't want to do
Scared when ignored or made fun of by others
Scared if someone says something that is wrong or bad
Scared if someone starts arguing
Scared in an embarrassing situation
Too scared to ask questions in class
Scared when in a school play, choir, music, or dance recital

Factor 2 – General Conversation

Scared to meet new kids
Scared when I start to talk to someone
Scared when speaking in front of the class
Scared when I have to do something while others watch me
Scared when joining a large group
Scared if I have to talk for longer than a few minutes

Factor 3 – Physical & Cognitive Symptoms

When I am in a social situation, I feel (somatic symptoms)
Before going someplace, I feel (somatic symptoms)
When I am with other people, I think “scary” thoughts
Before going to a party, I think about what might go wrong

Factor 4 – Avoidance

I avoid social situations (parties, school, playing with others)
I leave social situations
Scared at parties, dances, school...and go home early
Scared when becoming the center of attention

Factor 5 – Public Performance

Scared when speaking in front of the class
Scared when answering questions in class or at group meetings
Scared when speaking or reading aloud in front of a group
Scared when I have to do something while others watch me