

FACTOR STRUCTURE OF THE SOCIAL PHOBIA AND SOCIAL INTERACTION
ANXIETY SCALES AMONG
SOUTH-ASIAN AMERICANS

By

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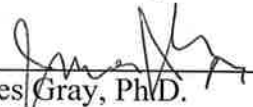
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FACTOR STRUCTURE OF THE SOCIAL PHOBIA AND SOCIAL INTERACTION
ANXIETY SCALES AMONG ASIAN AMERICANS

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ABSTRACT

Prior research has demonstrated a paradox among elevated social anxiety scores on self-report scales of distress and behavioral indicators of impairment for Asian American individuals. The present study attempted to examine this discrepancy by investigating the psychometric ethnic equivalence of two commonly used self-report measures: the Social Phobia Scale (SPS) and the Social Interaction Anxiety Scale (SIAS). This study sought to analyze the joint factor structure of the SPS and SIAS in this minority population, as well as the influence of ethnic identity as it relates to the expression of social anxiety in individuals who self-identify as Asian Americans compared to Caucasian American individuals. Results from an exploratory factor analysis (EFA) revealed a 3-factor solution for the Asian American sample that somewhat resembles prior research conducted in Caucasian American groups. This data suggests that the measures are ethnically equivalent for Asian Americans. Correlations among measure total scores and individual factors generated by the EFA also suggest that an Asian American individual's overall ethnic identity and view of the self-construal does not influence the expression of social interaction anxiety or social performance anxiety on these self-report scales of distress. The current findings shed light on the significance of measurement equivalence and the cultural underpinnings of Asian American social behavior as they relate to the assessment of distress in this ethnic group.

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CHAPTER 1

INTRODUCTION

The term “Asian American” functions as a diverse umbrella for more than fifty different ethnic groups of people (Sue et al., 1995). Despite such large numbers, research on the assessment of social anxiety in this distinct population is controversial and incomplete. Specifically, a review of the existing literature illustrates a paradox regarding the incidence and expression of social anxiety among Asian Americans. There is previous literature on Asian American culture indicating that as a group, Asian Americans are socialized to act against emotional expression (Iwamasa, 1997; Markus & Kitayama, 1991, Okazaki, 2000; Uba, 1994). Conversely, prior research has also shown that Asian Americans frequently report elevated levels of social anxiety on standardized measures of distress compared to their Caucasian American counterparts (Okazaki, 1997; Sue, Sue, & Ino, 2001). This endorsement of distress on social anxiety measures is counter to what would be expected from a culture socialized to be emotionally inhibited. Research on the measurement equivalence of commonly used social anxiety measures for Asian Americans may be the key to clarifying this discrepancy.

Few studies, however, have attempted to examine the relationship between the expression of psychopathology and the psychometric properties of commonly used standardized measures of distress in this minority population. This study sought to contribute to the existing literature by examining the validity of a commonly used social anxiety measure in an Asian American sample.

Asian American Ethnic Identity

Ethnic identity has been postulated to be a potential moderator variable accounting for the inconsistency in the prevalence of social anxiety among Asian Americans that is evident in the literature. Ethnicity is defined by the Department of Health and Human Services as “a category determined by genes, culture, and social class, a product of social evolution” (1993, p. 11). Fundamentally, collectivistic countries are said to assign importance to the preservation of group harmony, while individualistic cultures are commonly understood to value the expression of individual wants and needs. It has been suggested that the strict social standards of collectivistic countries, which are intended to safeguard group harmony, may actually induce social anxiety due to the feared consequences of violating these norms (Schreier et al., 2010). Schreier et al. (2010) note that other researchers have reported that individuals from collectivistic countries (like those from Asian cultures) are more willing to validate negative characteristics than those from individualistic societies and thus, are more willing to engage in self-criticism (Heine et al., 2000; Hong & Woody, 2007; Norasakkunkit & Kalick, 2002). Heinrichs and colleagues (2006) suggested that such a readiness to endorse negative attributes might explain the association between social anxiety and ethnic beliefs. It seems that elevated levels of self-reported social anxiety may typify a response style associated with collectivistic cultures, as opposed to representing an authentic difference in social anxiety between cultures (Schreier et al, 2010).

The self-construal, an essential component of ethnic identity, may provide the necessary link to understanding elevated levels of social anxiety in Asian American populations. The term self-construal refers to the *content and structure of the inner-self*

that is influenced by one's culture and relationship to others (Markus & Kitayama, 1991). Markus & Kitayama (1991) define the Western "independent" self-construal as an identity embodied mostly in individualistic countries. The independent self-construal emphasizes autonomy in behavior. Individuals with an independent self-construal act in accordance with their own thoughts and feelings and recognize relationships with others as important, but primarily as a reference for reaffirming their inner selves (Markus & Kitayama, 1991). The "interdependent" self-construal, on the other hand, is predominantly seen in individuals who identify with non-Western, collectivistic countries, such as Asian Americans. The interdependent self-construal is grounded in connectedness to others (Markus & Kitayama, 1991). Markus & Kitayama (1991) define an individual possessing an interdependent self-construal as a person who sees oneself as part of a larger social relationship. The behavior, thoughts, and feelings of this individual are determined by the thoughts and feelings of others (Markus & Kitayama, 1991). Thus, an individual with an interdependent self-construal is very aware of how he or she is being perceived by others and behaves accordingly. Because social anxiety is defined by the fear of negative evaluation by others (American Psychiatric Association, 2000), it is reasonable that this disorder converges with interdependent self-construal ideals.

Ham and colleagues (2011), for instance, found that an interdependent self-construal was positively associated with emotion suppression, which in turn, was positively correlated with social anxiety. Thus, the claim can be made that the tendency to suppress emotion, a practice salient in Asian American collectivistic culture, was linked not only to an interdependent self-construal, but also to higher levels of social anxiety in this ethnic group. Similarly, Hong and Woody (2007) found that independent

self-construal and identity consistency fully mediated the ethnic differences on self-reported social anxiety in a Korean and European-Canadian sample when using the Social Phobia and Anxiety Inventory. In this study, diverging from an independent self-construal seemed to predetermine elevated levels of social anxiety on a standardized measure of distress for Asian American individuals.

Social Anxiety Among Asian Americans

Despite a cultural emphasis on emotion suppression to preserve group harmony, many researchers have documented higher levels of social anxiety in East Asians and Asian Americans compared to their European American counterparts on standardized measures of distress (Hymes & Akiyama 1991; Okazaki 1997, 2000; Uba 1994). For instance, Okazaki, Liu, Longworth, and Minn (2002) discovered that Asian Americans reported more anxiety symptoms during a social performance task compared to European Americans. Interestingly, however, these Asian Americans did not physically show more nonverbal, behavioral expressions of anxiety during the task. This research replicated and extended previous findings conducted by Sue and his colleagues (1983; 2001). There is evidence that Chinese-Americans behave as assertively as their Caucasian counterparts in various role play situations with both Asian and Caucasian experimenters, though Asian Americans self reported more anxiety and apprehension in social situations (Sue, Ino,& Sue,1983; Sue, Sue, & Ino 2001). Collectively, these studies demonstrate that elevated levels of self-reported social anxiety do not translate into comparable displays of behavior or subjective distress for Asian Americans (Okazaki et al. 2002). Lai and Linden (1993) would argue that anonymous reporting conditions are what produce the

elevated levels of social anxiety documented in Asian American samples. Asian Americans may feel free to endorse negative emotion on self-report scales of distress because they are aware that such a transgression against their culture will remain unknown. While Asian Americans may feel they can truly disclose private symptoms of social anxiety without fear of social repercussion when using self report measures, previous research has shown that the behavior of Asian Americans do not match these self-reported levels of distress.

When tested in laboratory role-play situations it could be possible that Asian Americans suppress expressions of psychopathology so as not to shame the members of their ethnic group. This would provide evidence for the lack of apparent displays of social anxiety observed in Asian Americans during laboratory role-play situations. If this reasoning were true, however, it would also seem that in face-to-face interviews, Asian Americans would feel too ashamed to endorse symptoms of social anxiety to interviewers. Okazaki (2000) examined the relationship between ethnicity and reporting condition, however, and found no distinction between Asian American and Caucasian American reporting of emotional distress as a function of reporting method. Okazaki (2000) discovered that neither Asian Americans nor Caucasian Americans varied in their degree of social anxiety symptoms between the written reporting settings and the face-to-face interview. Thus, Asian Americans who reported elevated social anxiety on self-report scales also described a more intense experience or more frequent experiences of social anxiety to interviewers. Okazaki (2000) found that Asian Americans did, in fact, report significantly more social anxiety than Caucasian Americans in both reporting contexts. Hsu and Alden (2007) replicated these findings and discovered that first-

generation Chinese heritage college students reported significantly more social anxiety compared to their European American counterparts, though they were no less likely to admit to social anxiety symptoms in face-to-face interviews compared to an anonymous questionnaire. These studies show that symptom report of social anxiety is not only impervious to reporting contexts, but that Asian Americans are clearly willing to acknowledge social anxiety symptoms to others despite what we know of the cultural pressure they experience to conceal negative emotion.

Asian Americans are willing to personally discuss symptoms of social anxiety with researchers. Asian Americans are ready to describe symptoms of social anxiety on self-report measures. Yet, Asian Americans do not display observable, anxious behavior in laboratory induced social situations like Sue et al. (1983; 2001) and Okazaki et al. (2002) reported. A socially anxious individual would seemingly display elevated levels of social anxiety across all types of assessment contexts, not merely one or two. It may be that one or more of these reporting contexts are biased against minority respondents. For example, Asian Americans may not actually be experiencing such high levels of social anxiety, and instead, are inadvertently endorsing social anxiety symptoms on self report measures of distress that are written for respondents from Western populations. A more definitive explanation of this theory lies in the link among social anxiety, ethnicity, and the psychometric properties of self-report measures.

Asian Americans and Social Anxiety Measurement

Studies continue to report elevated levels of social anxiety in Asian Americans samples, yet very little research has investigated the psychometric properties of the

measures used to garner these results in minority populations. For instance, the test construction of current self-report measures of distress may be failing to incorporate the cultural orientation of other ethnic groups. This is significant because symptoms of social anxiety may differ depending on the cultural norms associated with an individual's ethnicity. Culturally influenced response styles could be leading Asian Americans to inadvertently endorse social anxiety symptoms on self-report measures of distress. This may partially explain why Asian Americans report significantly more social anxiety on these measures, but fail to display observably anxious behavior when being evaluated for social anxiety in laboratory role-play settings. Likewise, Asian Americans may be unintentionally endorsing high intensity anxiety on a few social anxiety items, or even low intensity anxiety on multiple social anxiety items, all of which can produce elevated scores of social anxiety on commonly used scales. As a result, the data used to quantify the prevalence of social anxiety in this minority population may be inaccurate.

It is clear that standardized scales of social anxiety are administered to many populations under the assumption that the measures are culture neutral. In reality, however, these social anxiety scales may be written solely for individuals who identify with a Western, individualistic culture, and consequently, an independent self-construal. Heinrichs and colleagues (2006), for example, found that people from collectivistic countries, such as Asian Americans, report significantly higher levels of social anxiety compared to those from individualistic countries. Heinrichs and colleagues (2006) reasoned that because collectivistic countries are more tolerant of socially withdrawn behaviors, people from collectivistic countries might perceive socially reticent behaviors as more acceptable and as a result, endorse them freely on Western standardized

measures of distress. Thus, Western symptoms of social anxiety might classify a normative response to social situations for Asian Americans due to the cultural socialization that produces an interdependent self-construal in this population. If normative behaviors in a collectivistic country constitute a classification of anxiety in another, it seems the ethnic equivalence of the measures being used needs to be reevaluated. The minimal attention this receives in the literature highlights the lack of existing research regarding measurement bias as it relates to the classification of social anxiety across various ethnic groups.

Okazaki's 1997 study on cultural vulnerability for anxiety provides evidence supporting the idea that social anxiety measures may be written solely for a Western, individualistic audience. Okazaki (1997) found that individuals who scored lower on *independent* self-construal variables reported experiencing higher levels of social anxiety using the Social Avoidance and Distress Scale (SAD) and the Fear of Negative Evaluation (FNE) scale (Okazaki, 1997). Thus, the individuals who were more socially anxious were *not* necessarily the individuals who endorsed an *interdependent* self-construal, but those who simply did not score highly on levels of independent self-construal. For widely used social anxiety measures to be adequately administered to diverse populations and accrue accurate diagnoses, the measures must not be biased toward a specific population of people. As it currently stands, social anxiety measurement items seem to be written for respondents from individualistic cultures, who predominantly possess an independent self-construal. If today's social anxiety self-report measures are biased toward Western, individualistic cultures, scores generated by individuals from differing cultural orientations should not be assumed accurate.

Norasakkunkit and Kalick (2002) proposed that the association between low levels of independent self-construal and higher levels of social anxiety might be overemphasizing symptoms of social anxiety in non-Western populations. Norasakkunkit and Kalick (2002) found that when self-construal variables and self-enhancement were accounted for, Asian participants in a college sample, who had scores that were relatively low on independent self-construal and self-enhancement, were no more socially anxious than European-American participants from the same college. Norasakkunkit and Kalick (2009) extended these findings when they attempted to discover a more definitive link between self-construal and the theoretical cultural bias of social anxiety measures. Their cross-national study found that two commonly used social anxiety measures (the SAD and the FNE) link independent self-construal with mental health even though no evidence was found for an association between independent self-construal and emotional well being (Norasakkunkit & Kalick, 2009). These studies shed light on the misrepresentation of cultural differences in emotional well being as a result of overlooked cultural differences in social anxiety measures. North American instruments for measuring social anxiety have been standardized on a population of people who largely possess an independent self-construal. As a result, symptoms of a healthy, *interdependent* self-construal (predominant in individuals from non-Western countries) are being pathologized as anxiety because they resemble symptoms of distress from an independent cultural mindset (Norasakkunkit & Kalick, 2002). This has resulted in the inaccurate representation of social anxiety symptom levels in Asian American populations. The proposed study will address these issues by highlighting the current, inadequate

evaluation of the psychometric properties and ethnic equivalence of a commonly used social anxiety measure.

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

The Social Phobia Scale (SPS) and the Social Interaction Anxiety Scale (SIAS) are two commonly used measures in the assessment of social anxiety. Developed by Mattick and Clark (1998), these scales have demonstrated acceptable reliability and validity across numerous research studies. The SPS, typically a two-factor measure, was designed to measure fears of performing in the presence of others (Mattick & Clark, 1998). The SIAS, on the other hand, is designed to assess anxiety in interacting with others.

Rodebaugh, Woods, Heimberg, Liebowitz, and Schneier (2006), found in a primarily Caucasian sample that the SIAS contained one substantive factor, with variance associated with both reverse scored and straightforwardly worded items. They also discovered that three reverse-scored items of the SIAS failed to load on the same factor as the other items and thus, are accounted for by a separate method factor (Rodebaugh et al., 2006). These three items seem to be more related to extraversion than social anxiety (Rodebaugh et al., 2006).

Carleton and colleagues (2009) investigated the joint factor structures of the SPS and SIAS in a predominantly Caucasian sample. Using an exploratory factor analysis, they discovered SIAS items comprising one factor and SPS items comprising two other factors. In their findings, factor one, or the SIAS items, could be conceptualized as social interaction anxiety (Carleton et al., 2009). The SPS items, on the other hand, comprised

factors two and three, conceptualized as fear of overt evaluation and fear of attracting attention, respectively (Carleton et al., 2009). Safren and colleagues (1998) had also investigated the joint factor structure of the SPS and the SIAS using an exploratory common factor analysis of the items from both scales and discovered three factors: “interaction anxiety,” “anxiety about being observed by others,” and “fear that others will notice anxiety symptoms,” which all represent different aspects of a single higher-order factor, “social anxiety.” Factor one, interaction anxiety, correlated more strongly with all measures of social interaction anxiety than with measures of performance anxiety (Safren et al., 1998). Factor two, anxiety about being observed by others, correlated substantially with both sets of measures (Safren et al., 1998). Factor three, fear that others will notice anxiety symptoms, correlated more strongly with measures of performance anxiety than with measures of social interaction anxiety.

Hambrick and colleagues (2009) discovered that in comparisons of Caucasian participants with both Asian American and African Americans participants, most items of the SIAS displayed significant differential item functioning that renders Asian American undergraduates more likely to endorse pathological responses at each level of social interaction anxiety. The only item that did not follow this trend, for which Asian Americans reported less psychopathology, was item, “I am unsure whether to greet someone I know only slightly.” This item, however, seems to be related to Asian American collectivistic ideals, specifically pertaining to the preservation of harmony in social relationships. There was also little evidence of discrimination differential item functioning, except for Item 10 of the SIAS, “I have difficulty talking with other people.” This item had stronger discriminating power for Asian American students (Hambrick et

al., 2009), which could be attributed to the interdependent self-construal ideals that individuals from this culture are known to possess. Hambrick and colleagues (2009) also noted that individual questions on the SIAS performed as well, if not better, in discriminating Asian American individuals on the basis of social interaction anxiety. Asian Americans, however, were more likely to endorse pathological responses due to differential item properties (Hambrick et al., 2009). It is important to note that high scores on these social anxiety measures can be attained by reporting a higher frequency of anxiety experiences in a limited number of situations, or by reporting a lower frequency of anxiety experiences across a wider range of situations. Thus, if even only a few items on these measures are inadvertently culture specific, minority groups like Asian Americans may unintentionally score highly on these social anxiety scales. The reality is that these commonly used scales are not cultural neutral. This study sheds light on the limitations in applicability of commonly used and widely accepted measures of social anxiety. It also emphasizes the need and importance of measures that can assess anxiety equally well across individuals of all ethnicities.

Though there is support from Hambrick and colleagues (2009) that the SIAS performs differently for Asian Americans compared to Caucasians, no study has examined the factor structure of the SPS in an Asian American sample. The purpose of this study was three-fold. First, to examine the factor structure of the SPS in Asian Americans compared to Caucasian Americans to identify if it is an appropriate tool for assessing social anxiety in this population. We also included the SIAS in our study since it is commonly given in conjunction with the SPS. As a result, we assessed the factor structure of both scales. We expected to see a similar factor structure as found by

Carleton and colleagues (2009) and Safren and colleagues (1998) with respect to the SIAS. Second, we investigated the extent of covariation between the SPS and other similar and dissimilar measures to aid in establishing the construct validity of the SPS among Asian Americans. Third, we examined the relationship between ethnic identity, self-construal, and the expression of social anxiety in Asian Americans.

CHAPTER 2

METHOD

Participants

Two hundred and sixty respondents from American University and the surrounding community participated in this study. Of these participants, 130 were Asian Americans and 130 were Caucasian Americans. Students from American University volunteered to obtain extra credit for introductory psychology courses. Participants from the community were recruited using Facebook and an online recruitment database called “Mechanical Turk.” Respondents who did not speak English as their primary language and were under the age of 18 were excluded from the sample.

Measures

Social Phobia Scale (SPS) (Mattick & Clarke, 1998)

The SPS is a 20-item measure designed to assess fear of scrutiny in situations requiring social performance. The SPS presents items detailing conditions in which an individual would be observed by others and asks respondents to rate how comfortable or uncomfortable they would be in each situation. Respondents rate how characteristic each item included in the measure is from 0 (not at all characteristic of me) to 4 (extremely characteristic of me). Individuals diagnosed with social phobia typically achieve a score of 40 and above; community samples typically score approximately 14 (Mattick and Clarke, 1998). Internal consistency for this measure is usually high ($\geq .88$). This measure is often administered in conjunction with the SIAS.

Social Interaction Anxiety Scale (SIAS)
(Mattick & Clarke, 1998)

Similar to the SPS, the SIAS also includes 20 items rated on a five point, 0 to 4 Likert scale and is designed to assess anxiety experienced in interacting with others. Respondents indicate for each item the extent to which the item is true for their personal interactions with a scale ranging from 0 (not at all true of me) to 4 (extremely true of me). The SIAS also has excellent retest reliability (.92) and internal consistency (.94).

Beck Depression Inventory – Second Edition
(BDI-II; Beck, 1996)

The BDI-II (Beck, 1996) is a 21-item self-report questionnaire designed to measure depressive symptom severity. Using a four-point Likert scale, participants indicate how they have been feeling in the past two weeks by rating depressive symptoms from zero (not present) to three (very severe). The scores range from 0 to 63. Depressive symptoms are inferred from the total score and classified as minimal (0-13), mild (14-19), moderate (20-28), or severe (29-63). This measure is found to have high internal consistency (.89 to .92). The psychometric characteristics of the BDI-II have been shown to have high reliability with an ethnically diverse population (Carmody, 2005). No differences were found in overall scores among a variety of ethnic groups, including Asian Americans, African Americans, Native Americans, Caucasian Americans, and Hispanics (Carmody, 2005). The only significant difference between Asian Americans and Caucasian Americans on the BDI-II was Caucasian Americans having higher scores on the item of agitation (Carmody, 2005). This measure is included in the present analysis to help assess the convergent and discriminant validity of the SPS and SIAS in order to establish good construct validity of these measures in Asian Americans.

State Trait Anxiety Inventory – Form Y
(STAI-Y; Speilberger, 1983)

The State Trait Anxiety Inventory is a self-report measure divided into two scales, the Trait-Anxiety Scale (TAS) and the State-Anxiety Scale (SAI), each of which has 20-items. Trait anxiety, or feelings of apprehension and tension, refers to individual differences in the intensity and frequency with which anxiety manifests over time (Barnes et al., 2002). State anxiety is the product of stressors that an individual experiences as threatening (Barnes et al., 2002). Individuals with higher trait anxiety scores also are more likely to have higher state anxiety scores (Zhang, 2012). Individuals using the STAI-State scale respond to 20 statements by describing how they feel “right now” (i.e. calm, tense, etc.) using a 4-point Likert scale with scores ranging from one (not at all) to four (very much so) (Barnes et al., 2002). The STAI-Trait scale also consists of 20 items describing how people generally feel (i.e. confident) using a 4-point Likert scale with scores ranging from almost never, to almost always (Barnes et al., 2002). The STAI has been translated into many different languages including Japanese. The first version of the STAI (Form X) is often utilized in clinical research (Barnes et al., 2002). The second version of this measure, Form Y, was developed in 1983 with improved psychometric properties and a more replicable factor structure (Oei, et al., 1990). The STAI has been reported to be both valid and reliable across a range of populations including Asian and Pacific Islanders and Chinese individuals (Zhang, 2012). Test-retest reliability for the trait scale of Form Y is high, with alpha coefficients ranging from .73 to .86 (Speilberger et al., 1983). The test-retest reliability alpha coefficients for the trait scale, on the other

hand, ranged from .16 to .62 (Speilberger et al., 1983). Internal consistency for the trait and state scales was .90 and .93, respectively (Barnes et al., 2002).

Multi-group Ethnic Identity Measure – Revised
(MEIM-R; Roberts et al., 1999)

The MEIM-R is a more condensed version of Jean Phinney's original Multi-group Ethnic Identity Measure. Designed to assess ethnic identity across a range of ethnic groups, the MEIM-R has been used in many research with both adolescents and adults. The MEIM-R contains 12-items revised to analyze just two main factors: ethnic identity search, and affirmation, belonging, and commitment. Participants respond to all 12-items with a series of scores ranging from 1 (strongly disagree) to 4 (strongly agree), on a four point Likert scale. Summing across items and obtaining the mean yields a final score that indicates the development of an individual's ethnic identity. Scores can range from 1 (low ethnic identity) to 4 (high ethnic identity). Internal consistency for this measure is relatively high (.81 to .92) across a range of ages and ethnic groups.

Singelis Self-Construal Scale
(SCS: Singelis, 1994)

The Singelis Self-Construal Scale (1994), is a 24-item self-report measure that consists of two, 12-item subscales designed to assess independent and interdependent self-construals. The measure was standardized on an Asian American sample from Hawaii, and uses a 7-point Likert Scale. Respondents are evaluated on their connectedness to relationships with others, which emphasizes an interdependent self-construal that is considered to reflect the cultural ideals of a collectivistic society. Additionally, respondents are assessed on their independence from relationships with others, which highlights features of an independent self-construal that is considered to

represent individualistic cultures. Many studies have shown this measure to have decent internal consistency when used with Asian American samples (Norasakkunit & Kalick, 2002; Okazaki, 2000; Singelis, 1994; Singelis & Sharkey, 1995) with alphas of .74 and .70 for the interdependent and independent subscales respectively (Singelis, 1994).

Procedure

Students from American University were individually scheduled to complete the informed consent and packet of questionnaires in the Anxiety Disorders Research Laboratory on campus. Each session was scheduled for 30 minutes. Respondents from the community who were recruited using Facebook or Mechanical Turk were redirected to the website “surveymonkey.com” to complete the informed consent and packet of questionnaires online.

CHAPTER 3

RESULTS

Descriptive Statistics

Multiple chi-square tests were performed to identify relationships between participant ethnicity and various demographic data. A chi-square test was conducted to investigate if males and females were distributed differently across ethnicity. A significant difference for gender was found, $\chi(2) = 52.461, p < 0.001$, as evidenced in Table 1. There were more Asian American males than Caucasian American males and more Caucasian American females than Asian American females. A significant difference was also found for marital status ($\chi(5) = 21.80, p = 0.001$), such that Caucasian Americans more often reported being single compared to Asian Americans, who reported more often being married. A significant difference was also found for highest education level completed ($\chi(5) = 50.47, p < 0.001$), such that Asian Americans reported attaining higher degrees compared to Caucasian Americans. A significant difference was revealed for household income ($\chi(4) = 21.45, p < 0.001$), with Caucasian Americans reporting higher household incomes on average. Additionally, a significant difference for participant generation in the United States by ethnicity was also found, $\chi(4) = 68.82, p < 0.001$.

Table 1. *Chi Square Tests of Participant Demographic Variables*

	Asian American		Caucasian American	
	M (n=152)	SD	M (n=174)	SD
Age	27.45	7.43	24.88	8.16
Gender	n	%	n	%
Male	94	28.8	41	12.6
Female	53	16.3	130	39.9
Not Reported	5	1.5	3	0.9
Generation	n	%	n	%
First	25	7.7	7	2.1
Second	50	15.3	19	5.8
Third	71	21.8	90	27.6
Other	3	0.9	9	2.8
Not reported	3	0.9	49	15.0
Marital Status	n	%	n	%
Single	102	31.3	147	45.1
Married	47	14.4	22	6.7
Separated	0	0.0	1	0.3
Divorced	0	0.0	2	0.6
Widowed	0	0.0	1	0.3
Other	2	0.6	0	0.0
Not reported	1	0.3	1	0.3
Highest Education Level	n	%	n	%
High School	15	4.6	65	19.9
2 year trade/equiv.	2	0.6	11	3.4
Bachelors	82	25.2	61	18.7
Masters	51	15.6	28	8.6
Professional	1	0.3	4	1.2
Other	1	0.3	5	1.5
Income (SES)	n	%	n	%
Below \$20,000	51	16.0	44	13.8
\$20,000-\$40,000	52	16.3	35	11.0
\$50,000-\$70,000	28	8.8	42	13.2
Above \$80,000	14	4.4	43	13.5
Other	3	0.9	7	2.1
Not reported	4	1.2	3	0.9

Table 2. *Independent Samples T-Test of Mean Group Differences*

		Mean	SD
Age	Asian American	27.45*	7.43
	Caucasian	24.88	8.16
SPS Total	Asian American	38.39*	18.39
	Caucasian	20.60	13.93
SIAS Total	Asian American	18.70*	4.03
	Caucasian	16.78	3.99
SCS-Interdep. Total	Asian American	4.97*	0.97
	Caucasian	4.61	0.67
SCS-Indep. Total	Asian American	4.80	0.99
	Caucasian	4.61	0.80
STAI-State Total	Asian American	43.52*	10.28
	Caucasian	40.80	12.93
STAI-Trait Total	Asian American	46.51	8.99
	Caucasian	46.65	12.56
BDI-II Total	Asian American	27.43*	16.05
	Caucasian	14.38	11.59
MEIM Total	Asian American	2.92*	0.53
	Caucasian	2.46	0.65

- Indicates a significant difference in scores between ethnicities

The results of several Independent T-tests shown in Table 2 above revealed significant differences among participants for age, SPS, SIAS, SCS-Interdependent, STAI-State, BDI-II, and MEIM total scores. In particular, Asian Americans were older, $t(322) = 2.94$, $p < .001$, had higher SPS and SIAS total scores, $t(280.63) = 9.65$, $p < .001$ and $t(312) = 4.87$, $p < .001$, respectively. Likewise, Asian Americans also had higher STAI-State, $t(296.99) = 2.03$, $p < .05$, and BDI-II total scores, $t(254.10) = 8.08$, $p < .001$. Finally, Asian Americans had higher scores on the SCS-Interdependent subscale and MEIM measure, $t(248.97) = 3.80$, $p < .001$ and $t(307.54) = 6.84$, $p < .001$, respectively.

A T-Test did not illustrate significant differences between Asian American and Caucasian American scores on the SCS-Independent subscale nor the STAI-Trait subscale.

Exploratory Factor Analysis

An exploratory factor analysis (EFA), using Promax rotation, was conducted for both the Asian American and Caucasian American samples. Appendix C (Asian American EFA) and Appendix D (Caucasian American EFA) contain the rotated factor loadings of the structure matrixes and initial communality estimates for the primary factors retained in each ethnic group. SPS and SIAS measure items were considered to load onto a factor if the item's loading score surpassed 0.40. For both populations, items with a loading score greater than 0.40 on more than one factor were retained if the difference between the two factor loading scores was less than 0.10. An item with a difference in scores higher than 0.10 was considered to load onto the factor with the higher factor loading score. For the Asian American sample, the EFA produced three factors. Factor one, conceptualized as "social interaction anxiety," consists of 15 items from the SIAS. Factor two, conceptualized as "fear of being observed by others," consists of all twenty items of the SPS. Finally, Factor three consists of the three reverse scored items of the SIAS. For the Asian American sample, item 8 of the SIAS failed to load onto any one factor as a result of the 0.40 factor loading cutoff that was implemented in the exploratory analysis. Likewise, item 6 of the SIAS ("tensing when meeting an acquaintance on the street") loaded onto more than one factor. Despite this, analysis revealed factors that largely correspond to fears of scrutiny and social interaction anxiety.

These results indicate two distinct types of social anxiety fears assessed by these scales. Analyses of correlations of these factors with mean total scores of various measures are displayed in Appendix A.

Appendix D illustrates the rotated factor loadings for the Caucasian American sample, in addition to initial communality estimates and structure matrix scores for five factors that were retained from the EFA. Factor one, conceptualized as “apprehension of social contact,” consists of SPS item 16, and six additional SIAS items. Factor 2, conceptualized as “fear of being observed by others,” consists of 6 SPS items. Factor 3, also conceptualized as “fear of being evaluated by others,” consists of 4 SPS items and 2 SIAS items. Factor 4, conceptualized as “social interaction anxiety,” consists of 5 SIAS items. Factor 5, conceptualized as “fear of attracting attention,” consists of 3 SPS items and 2 SIAS items. Factor 2 and Factor 4 are the only two factors that correspond exclusively to the SPS and SIAS, indicating that the scales are not mutually exclusive in this sample of Caucasian Americans. These results seem to highlight five constructs within the larger, more general paradigm of social anxiety for the present study’s Caucasian American population, which directly contradicts data generated by prior research. Analyses of correlations of these factors with mean total scores of various measures for the Caucasian American sample are displayed in Appendix B.

CHAPTER 4

DISCUSSION

This study evaluated the joint factor structure of the SPS and the SIAS and assessed the relationship between social anxiety scores, ethnic identity, and the self-construal for Asian and Caucasian American participants. The EFA of the combined SPS and SIAS in the current study revealed a 3-factor solution for the Asian American sample when analyzed together. The items from the SPS loaded onto one factor and the SIAS items comprised two separate factors. The 3-factor solution and characterizations of the factors generated for the current Asian American participant population somewhat resembles the factor solutions produced in prior research (Safren et al., 1998; Carleton et al., 2009), in that two of the three factors produced were distinctly comprised of SPS and SIAS items. The third factor produced, however, consisted only of the reverse scored items of the SIAS. Interestingly, this does replicate data from a previous research study using a Caucasian American, non-clinical sample (Habke et al., 1997). The presence of these items on a third factor suggests that they may not be consistent with the other items of the SIAS that are designed to tap anxiety (Habke et al., 1997). Rodebaugh et al. (2007) actually removed the reverse scored items from the SIAS and found that this improved the psychometric properties of the scale. Like Habke et al., Rodebaugh and colleagues (2007) note that the reverse items of the SIAS appear to tap attitudes and behaviors related to “social ease” as opposed to social anxiety. Their research showed that the reverse scored items of the SIAS had a significantly high correlation to a measure of extraversion, indicating that these items do, in fact, relate more to social ease and as a result, may not necessarily assess a *lack* of social interaction anxiety (Rodebaugh et al.,

2007). The generation of these three factors resembles prior research conducted in Caucasian Americans which suggests that Asian Americans may not experiencing social anxiety differently compared to their Caucasian American counterparts.

Additionally, Factor 1 (solely SIAS items) for the Asian American sample was significantly and positively correlated with Factor 2 ($r = 0.77$), which contained only SPS items. This correlation was expected, given that the SIAS and SPS measures are tapping related constructs and as such, are usually administered together. Factor 1 (solely SIAS items), however, was *not* significantly related to Factor 3 (reverse scored SIAS items; $r = 0.13$). It seems if the reverse scored items of the SIAS were correctly tapping social interaction anxiety, there would have been a significant, negative correlation between these two factors. In other words, if the items were related (as they are expected to be) it would seem that as participants endorsed more reverse scored SIAS items (supposedly indicating less social interaction anxiety), they would also endorse fewer of the remaining SIAS items. This, however, appears not to be the case and provides additional evidence for the removal of the reverse scored SIAS items from the SIAS scale, particularly with this Asian American sample.

Factors 1 and 2 were also significantly, moderately, and positively correlated with the STAI-State ($r = 0.52$, $r = 0.43$, respectively), STAI-Trait ($r = 0.59$, $r = 0.52$, respectively), and BDI-II ($r = 0.55$, $r = 0.59$, respectively) total scores, respectively. This finding seems reasonable given that symptoms of social interaction anxiety and social phobia may also be influencing an individual's mood and overall experience of anxiety, unrelated to social situations. This may also aid in explaining the higher BDI-II scores found for the Asian American participants in this study, compared to their Caucasian

American counterparts. As previously mentioned, such high scores on this measure may be the product of a bidirectional relationship for anxiety overall, in that the higher levels of social anxiety found for the current Asian American sample are also contributing to greater experiences of depressive symptomatology for this group. These individuals demonstrated higher overall scores on *many* of the measures of distress utilized in this study compared to Caucasian American participants. It seems plausible that those with significantly higher scores on several standardized measures of distress would also likely be experiencing elevated symptoms of depression, as is indicated by higher scores on the BDI-II that were generated in this study. As Hong and Woody (2007) note, high scores on standardized measures of distress can also be easily influenced by a strong endorsement of only a few measure items, or a slight endorsement of many items. This notion may be especially applicable in explaining the elevated BDI-II scores found for the current Asian American participants. Interestingly, Factor 3 was significantly and *negatively* associated with the STAI state ($r = -0.20$) and trait scale ($r = -0.23$). Though this association is weak, it does indicate that as Asian Americans endorsed more reverse scored SIAS items (supposedly indicating less social interaction anxiety), their state and trait anxiety scores decreased. This relationship may seem reasonable given that Factor 3 measures social ease (Habke et al., 1997; Rodebaugh et al., 2007).

Unlike Factor 1, Factor 2 (solely SPS items) was significantly and positively correlated with Factor 3 ($r = 0.17$) for the Asian American sample. Though this association is weak, it indicates that as Asian Americans endorsed more reverse scored items on the SIAS (supposedly indicating less social interaction anxiety), they also endorsed more SPS items (indicating greater social phobia). Because the SPS is designed

to tap anxiety related to social performance and concern when being observed by others, it seems likely that individuals who endorse such distresses are experiencing a certain level of social discomfort in these situations, as well. If the reverse scored items of the SIAS are in fact tapping social unease, as opposed to social interaction anxiety, it is reasonable that those items (Factor 3) would correlate with SPS items (Factor 2). This further highlights the lack of relationship between the reverse scored items of the SIAS and social interaction anxiety for Asian Americans in this study. Overall, it seems that these items interact strangely to discriminate between social interaction anxiety and social discomfort on this scale, which not only provides additional evidence for the potential removal of these items from the measure, but also for proceeding with caution in administering the measure to assess social anxiety, perhaps particularly with Asian Americans.

Results show significant relationships among ethnic identity, self-construal, and anxiety produced for the Asian American sample in that STAI-State total scores were negatively correlated with MEIM total scores, ($r = -0.21$), SCS-Interdependent total scores, ($r = -0.22$), and SCS-Independent total scores, ($r = -0.25$). STAI-Trait total scores were also negatively correlated with MEIM total scores, ($r = -0.20$), SCS-Interdependent total scores ($r = -0.22$), and SCS-Independent total scores ($r = -0.27$). Though the associations of these measures are not very strong, these significant results indicate that higher scores on measures of ethnic identity and self-construal are associated with lower state and trait anxiety for Asian Americans. Prior research supports this finding. For instance, Yi & Fuligni (2002) found that the importance of an individual's ethnic identity was associated with positive well being on a daily basis only for participants who had

high ethnic identity. Thus, it seems reasonable that the Asian Americans in this sample who scored highly on measures of ethnic identity would also show a decrease in scores on other measures of psychopathology. Additionally, these findings provide evidence for the conclusion that for the Asian American individuals in this study, a stronger sense of ethnic identity is marginally related to healthier, overall functioning in terms of experiences of anxiety.

Interestingly, all three factors failed to correlate significantly with the MEIM for the Asian Americans in the present study. Based on this finding, we can conclude that the endorsement of items on the SPS, the straightforwardly worded items on the SIAS, and the reverse scored items of the SIAS are not related to results on a measure of ethnic identity for this group. Intriguingly, Factor 1 and Factor 2 also failed to demonstrate a significant correlation with both subscales of the SCS. Based on this result, it seems that the endorsement of straightforwardly worded items on the SIAS and SPS measures is not related to scores on a measure of self-construal. Similarly, Asian American SIAS and SPS *total* scores were not significantly associated with total scores on the MEIM or either subscale of the SCS. This indicates that overall, two of the generated factors, in addition to social anxiety total scores, were not associated with scores of ethnic identity or self-construal for the present study's Asian American participants. Based on this data, it can be concluded that an Asian American individual's overall ethnic identity and view of the self-construal does not influence the expression of social interaction anxiety or social performance anxiety on these self-report scales of distress.

Factor 3, on the other hand, did correlate significantly with the measure of self-construal. It was significantly and positively associated with both the Interdependent ($r =$

0.29) and Independent ($r = 0.25$) subscales of the SCS for the current Asian American sample. Again, though this association is weak, it indicates that as Asian Americans endorsed more reverse scored items of the SIAS (supposedly indicating less social interaction anxiety), their scores on a measure of self-construal increased. Though this result was significant for both subscales of the SCS, it suggests that stronger feelings of either type of self-construal for this group of individuals is slightly linked to an experience of decreased social interaction anxiety, or social discomfort.

Work by Singelis and colleagues (1994) may aid in understanding these findings. These researchers note that the co-existence of these two aspects of the self (independent and interdependent self-construal) may actually contribute to biculturalism (Singelis et al., 1994). Biculturalism is an interesting phenomenon to apply in interpreting these results since the individuals in this sample identify as American, but are of Asian descent. Thus, there is likely to be a constant interaction of two distinct cultures influencing the present Asian American participants' views of themselves. Likewise, the Asian American participants in this study also most often reported being third generation citizens. Having the experience of being born in the United States and raised by parents born in the United States may have led the majority of the Asian Americans in this study to indicate less social discomfort as assessed by the SIAS because they possess a bicultural view of themselves. On the other hand, it may be that some Asian Americans in this study embrace a more independent, compared to interdependent view of themselves, and vice versa. In this sense, it could be that biculturalism reduces the influence the self-construal may traditionally have in terms of mediating the experience of social anxiety for this population. Here, the utilization of a measure of acculturation may have been useful in

order to generate data to support the aforementioned reasoning. For instance, Norasakkunkit & Kalick (2002) utilized the Suinn-Lew Asian Self-Identity Scale (SL-Asia) in addition to the SCS in their study that utilized a very diverse sample of Asian American individuals. Given that this measure predominates in the world of acculturation literature, it is used often in research with Asian American samples. However, because the current study's sample consisted primarily of individuals identifying from South-Asian descent, the SL-Asia may not explicitly capture acculturation beliefs and values pertaining to this specific group of people. For instance, though the MEIM is most often used to evaluate the construct of ethnic identity (Phinney, 1992), with particular regard to minority groups, this measure fails to assess the meaning and/or impact that ethnic identity may have on the individual respondent completing the measure. In this manner alone, the measure may not be capturing certain aspects of ethnic identity that could be particularly salient to a specific group of individuals based on their culture or country of origin. This may be particularly true for the individuals in this study, especially in choosing a measure of acculturation to administer, given that a scale assessing this construct has yet to be developed with specific regard to South-Asian individuals. With this in mind, adding a measure of acculturation to this study that was not developed for South-Asian individuals could lead to significant holes in data regarding the impact acculturation may have on these participants. Thus, findings gathered by an existing measure of acculturation may not have tapped the aspects of this construct most salient to the South-Asian American individuals in the current study. Future research in the development and validation of scales specific to distinct populations of Asian Americans could shed more light on this topic.

Additionally, several other factors are important to consider in understanding the lack of relationship between social anxiety scores, ethnicity identity, and self-construal for this group. Firstly, an individual's ethnic identity is dynamic and changes over time (Roberts & Phinney, 1999). Thus, research on this element of an individual must be interpreted carefully, as ethnicity does not operate alone and often its implications and impact on an individual will vary (Phinney & Ong, 2007). Though Asian Americans are traditionally thought to retain an interdependent self-construal, it may be that the possession of either type of self-construal is not what effects the experience of social anxiety in this population as previously hypothesized. Though the Asian Americans in the present study seem to be more interdependently oriented on average based on mean total scores on the SCS, the present Asian Americans had higher average scores on *both* the interdependent ($M = 4.97$) and independent ($M = 4.80$) subscales of the SCS compared to their Caucasian American counterparts ($M = 4.61$ and $M = 4.61$, respectively). The Asian Americans in the current study also scored higher on average on both subscales compared to Asian Americans in prior research, with scores typically ranging between 4.43 and 4.93 for the interdependent subscale, and from 4.50 and 4.77 for the independent subscale (Dinnel et al., 2002; Hsu et al., 2007; Kleinknecht et al, 1997; Norasakkunkit & Kalick, 2002; Singelis & Sharkey, 1995). Research on the integration of the multiple facets of an individual's identity may aid in understanding the application of these findings. For instance, Berry and colleagues (2006) analyzed national American identity, thirteen different ethnic identities, and acculturation variables in an international study that included over 5,000 immigrant adolescents, ranging in age from 13-18 years. The largest number of participants demonstrated an "integrated profile" in

which their individual ethnic identity and national American identity were both strong and positively correlated (Berry et al., 2006). Berry and colleagues (2006) found that this type of profile was also constantly linked to more positive adaptation. As such, and with the present findings in mind, it may be that ethnic identity and an explicit type of self-construal are playing a much smaller role in ameliorating or exacerbating the experience of social anxiety for Asian Americans than previously anticipated.

Though MEIM total scores for the Asian American group were not significantly related to SPS and SIAS total scores, or the 3-factor solution generated by the EFA, they were significantly positively correlated with *both* SCS-Interdependent total scores ($r = 0.67$) and SCS-Independent total scores ($r = 0.63$). This data indicates that for the Asian American participants in this study, higher ethnic identity scores are also related to higher scores of *both* types of self-construal. Though it is expected that Asian Americans possess a more interdependent self-construal, it may be that the worlds of research and clinical practice have generated a “culturally expected self-construal” (Hong & Woody, 2007) that individuals (such as Asian Americans) are categorized into prematurely, perhaps even improperly. An individual’s self-construal could vary based on a range of factors, independent of his/her cultural background. Though this grouping serves a purpose in classifying individuals to assist with data collection in psychological research, Phinney & Ong (2007) note that this category is of much less importance psychologically than the meaning this label has for the individual. It seems that results generated by prior research on Asian Americans and the self-construal could be imposing a categorization of the self onto a class of individuals that is not welcome.

Okazaki (2002) would argue that interpretation of distress, like social anxiety, could not only be interpreted incorrectly based on an individual's ethnic identity, but also unintentionally assigned to the individual based on his/her ethnic identity. Though inadvertent, a label associated with ethnic identity (like interdependent versus independent self-construal) may be branding individuals as a member of a socially anxious, or non-anxious group. For instance, Okazaki (2002) found in a study utilizing self-rated and peer-rated measures of depression (BDI-II) and social anxiety (Social Phobia and Anxiety Inventory), that Asian American participants rated by Caucasian American informants had the significantly highest self-informant discrepancies on both sets of measures compared to Caucasian American participants who were matched by ethnicity (Okazaki, 2002). Overall, Caucasian American informants underestimated the levels of distress of both social anxiety, and depression, for Asian Americans. These results indicate that informant ethnicity impacts the degree of discrepancy for Asian Americans in this study. Okazaki (2002) hypothesized that the Caucasian American informants may have viewed the Asian American participants through a "culturally biased lens" in which stereotypes of Asian Americans as interpersonally reserved individuals, and a model minority group, emerged. Because of this, Okazaki (2002) postulated that these stereotypes led the Caucasian American informants to interpret indicators of social anxiety and depression differently, leading to the underestimation of distress for the Asian American group. This finding is of particular interest to the current study because it illustrates that preconceived notions of an individual's ethnic group can lead to biased interpretation of distress symptomatology. As such, commonly used self-report scales that have been standardized on Western respondents, who are thought to

experience certain types of distress with specific indicators (such as social anxiety), may be operating via a culturally biased lens for other ethnic groups. This thought is important in light of the current findings, because if self-report scales are not considering the cultural underpinnings of Asian American social behavior, then results from measures like those used in the current study will be culturally biased as well.

Hong and Woody (2007) attempt to mediate this cultural issue with the utilization of these self-report measures with Asian Americans by discussing the manner in which individuals must respond to scale items. For instance, all respondents of these measures are required to rate the occurrence of certain social situations and frequency of feelings associated with social anxiety. Hong and Woody (2007) reason that self-report measures do not allow for respondents to rate the degree of *impairment* they notice as a result of experiencing symptoms and situations related to social anxiety. Thus, the frequency in which respondents observe feeling anxious in social situations is being translated into indexes of impairment in these individuals (Hong & Woody, 2007). Because of this, Hong and Woody (2007) suggest the use of a “threshold model” for social anxiety, in which a higher threshold is considered in assessing social anxiety for Asian Americans of Western culture. According to this model, Asian Americans may experience more social anxiety than Western individuals, but this anxiety is not translated into distress or impairment (Hong & Woody, 2007). Hong and Woody (2007) also note the functionality of the construct of social anxiety for both Western and Asian societies, stating that just as there is a normative amount of social anxiety in Western cultures, there too is a normative amount of social anxiety in Asian cultures. This normative level for Asian American

individuals, even those born and raised in Western culture but of Asian American descent, could just be higher without necessarily being indicative of distress.

Because experiences of social anxiety are mediated by cultural variables often related to an individual's social identity (Hong & Woody, 2007), Asian American cultures could also be interpreting many situations of Western social anxiety as normal. This, however, would mean that elevated scores on measures of social anxiety would also be more culturally normative for this group (Hong & Woody, 2007). Thus, the threshold for acceptable pathology associated with social anxiety should be higher for Asian Americans compared to those from Western culture (Hong & Woody, 2007). Indeed, in this study, Asian Americans scored significantly higher than Caucasian Americans on both the SIAS and SPS. This threshold model is important to consider in interpreting the results of data generated by the commonly used self-report scales in the current study, and in others involving Asian American participants.

The results of the exploratory factor analysis (EFA) for the Caucasian American sample revealed a 5-factor solution when the SPS and SIAS measures were analyzed together. Only two of the factors generated (Factor 2 and Factor 4) corresponded exclusively to the SPS and SIAS. The first factor (characterized as “apprehension of social contact”) consisted of both SPS and SIAS items. The second factor (characterized as “fear of being observed by others”) corresponded exclusively to the SPS, containing six items. The third factor (characterized as “fear of being evaluated by others”) consisted of both SPS and SIAS items. The fourth factor (characterized as “social interaction anxiety”) corresponded exclusively to the SIAS and contained five items. The fifth factor (characterized as “fear of attracting attention”) consisted of both SPS and SIAS items.

These results seem to indicate that for the Caucasian Americans in this study, the SPS and SIAS measures are not independent and may not exclusively assess social interaction anxiety or social phobia, as has been shown in prior research. Previous research, for instance, has demonstrated that when analyzed together, the SPS and SIAS produce 2-factor scales, with all SPS and SIAS items loading onto two distinct factors (Mattick & Clarke, 1998). Past research also supports 3-factor solutions for the SPS and SIAS scales when analyzed together, with results generating a distinct factor of SIAS items (typically characterized as “social interaction anxiety”), and two distinct factors of SPS items (Safren et al., 1998; Carleton et al., 2009). The two factors of SPS items are usually characterized as “fear of being observed by others” or “fear of overt evaluation” and “fear of attracting attention” or “fear that others will notice anxiety symptoms” (Safren et al., 1998; Carleton et al., 2009). Though the *characterizations* of the factors in the current study resemble those found in prior research, the 5-factor solution for the Caucasian American sample does not.

A noteworthy factor may explain the current study’s unusual EFA findings. Firstly, though Safren & colleagues (1998) and Carleton and colleagues (2009) both produced 3-factor solutions with Caucasian American samples in their research studies, the participant populations in both projects received a clinical diagnosis of social phobia. The current study’s sample was recruited with advertisements seeking individuals interested in participating in a project related to social anxiety. Thus, it is possible for both participant populations that some individuals partook in the study due to their current, personal experiences of social anxiety and may have been formally diagnosed with this disorder. It is also possible that some respondents participated because they

were looking to personally learn more about their own social anxiety, without ever having received a formal diagnosis. On the other hand, because our study offered compensation for participation, it was expected that individuals would participate in this project without any personal symptoms of social anxiety, solely for reparation. Because of this, it was estimated that our sample would be very diverse in terms of Asian American and Caucasian American individuals with social anxiety symptomatology. This may have led many individuals to endorse certain items on the scales tapping social interaction anxiety and not others, in addition to particular items tapping social performance concerns, and not others, leading to such unique factor loadings for both ethnic groups.

For instance, for the Caucasian Americans in this study, the mean score on the SPS ($M = 20.6$) was slightly higher compared to average scores generated by prior research, which typically fall between 12.5 and 19.7 (Dinnel et al., 2002; Habke et al., 1997; Kleinknecht et al., 1997; Leung et al., 1994). The mean score on the SIAS ($M = 16.8$) for the Caucasian Americans in this study, on the other hand, was lower compared to typical scores on the SIAS produced in prior research, which usually range between 19.9 and 33.4 (Dinnel et al., 2002; Habke et al., 1997; Kleinknecht et al., 1997; Leung et al., 1994; Schreier, et al. 2010). Looking at these mean scores alone, it seems that the Caucasian American participants in this study have more concerns regarding social observation than social interaction overall, and are more distressed about social performance compared to individuals in prior research. It seems that individuals diagnosed with social anxiety, like those in prior research described above, would have more clear symptoms of either type of social concern, which would likely lead to more

distinct factor solutions. Scores on the SPS and SIAS for the Asian American participants in this study, in conjunction with the results of their EFA, support this notion. For example, Asian American participants scored lower ($M = 18.7$) on the SIAS compared to average scores for this measure documented in prior research, which normally fall between 21.9 and 34.5 (Dinnel et al., 2002; Kleinknecht et al., 1997; Leung et al., 1994; Schreier, et al. 2010). Like their Caucasian American counterparts, these results indicate that the Asian Americans in this study were also more concerned about social performance as opposed to social interaction. Like the Caucasian Americans in this study, the Asian American participants also scored more highly on the SPS ($M = 38.4$) compared to the SIAS and prior research, in which scored typically range between 15.1 and 18.5 (Dinnel et al., 2002; Kleinknecht et al., 1997; Leung et al., 1994). Interestingly, however, the present Asian Americans' scores on the SPS double those scores found on this measure in prior research. In addition, the average Asian American score on the SPS closely approaches the clinical cut off for a diagnosis of social phobia according to the developers of the scale ($M = 40$; Mattick & Clarke, 1998). Because the scores on the SPS for the Asian American sample are so high and their EFA results most thoroughly resemble those found in prior research, the claim could be made that these individuals had more clearly defined symptoms of social phobia, which led to more distinct factor loadings, compared to their Caucasian American counterparts.

The factor loading scores for items of the SPS and SIAS for both participant samples also reveal interesting information regarding the ethnic equivalence of these measures in distinguishing between social performance and social interaction anxiety. For instance, as mentioned previously, item 6 of the SIAS ("tensing when meeting an

acquaintance on the street”) loaded onto more than one factor for the Asian American sample, indicating poor discrimination between the social performance and social interaction anxiety constructs for this group. However, SIAS item 6 loaded highly onto Factor 1 (“apprehension of social contact”) for the Caucasian American sample. This seems to indicate that for the Caucasian Americans in this study, an item tapping tension with an acquaintance not only effectively gauges apprehension in a social situation, but it also illustrates that this item is related to others designed to measure apprehension in social situations for the present Caucasian Americans. Similarly, item 8 of the SIAS (“I feel tense if I am alone with just one person”) failed to load onto any factor as a result of the 0.40 factor loading cutoff that was implemented in the exploratory analysis for the Asian American sample. Like SIAS item 6, SIAS item 8 also loaded highly onto Factor 1 for the Caucasian American group. This indicates that this item, designed to measure the presence of tension experienced with another individual, does not seem to be sufficiently salient for the Asian American sample in assessing social interaction anxiety. For the Caucasian American participants, on the other hand, this item appears to be very relevant in tapping apprehension of social contact, as it is the third item that loaded onto Factor 1 for this group.

Additionally, Factor 1 for both ethnic groups contained SIAS items 15 (“I find myself worrying that I won’t know what to say in social situations”) and 18 (“when mixing in a group, I find myself worrying I will be ignored”), though these two items loaded much more highly for the Asian American sample (0.87 and 0.86, compared to 0.46 and 0.60, respectively). This data indicates that these two items are particularly prominent in assessing apprehension or anxiety pertaining to social interactions for both

ethnic groups. However, it seems that these two items carry significantly more weight in assessing this construct for the Asian American sample. Similarly, Factor 2 for each ethnic group (labeled “fear of being observed by others” for both), contained SPS item 10 (“I would find it difficult to drink something if in a group of people”), which loaded equally high on each factor for Asian Americans (0.83) and Caucasian Americans (0.83). This result signifies that for each population, SPS item 10 adequately taps observation concerns and is also equivalently relevant to this construct for both ethnicities. SPS item 17 also loaded more modestly onto Factor 2 for each ethnic group, though this item seemed to be less salient for both the Asian American and Caucasian American participants compared to SPS item 10. Given the factor loading scores, SPS item 17 (“I can feel conspicuous standing in a line”) seems to be more pertinent in gauging observation fears for the Asian American sample (0.62), compared to the Caucasian American group (0.49). Taken as a whole, this data emphasizes the inconsistencies in the ethnic equivalence of the SPS and SIAS measures. As such, the data gathered by these two measures should be interpreted carefully when attempting to draw conclusions between ethnically diverse samples.

Prior research has shown, however, that Asian Americans continue to demonstrate elevated levels of social anxiety on self-report measures of distress compared to Caucasian Americans. Prior research also typically illustrates higher average scores on the SIAS, compared to the SPS, for both Asian American (Dinnel et al., 2002; Kleinknecht et al., 1997; Leung et al., 1994) and Caucasian American (Dinnel et al., 2002; Habke et al., 1997; Kleinknecht et al., 1997; Leung et al., 1994) populations. In the current study, both ethnic groups scored more highly on the SPS than the SIAS, which

directly contradicts this previous research. This indicates that for the current study's entire sample, social performance concerns are more salient than social interaction concerns. Results from the SPS for the Asian American sample also support the finding that Asian Americans demonstrate elevated levels of social anxiety on self-report scales compared to Caucasian Americans. Though scores on the SIAS for the present Asian American participants resemble results found in prior research, such drastically high scores on the SPS seem to indicate that for these individuals, social performance concerns are significantly more prevalent than social interaction concerns. Again, the threshold model for social anxiety in Asian American populations may be particularly important in understanding and interpreting these findings.

For Caucasian Americans, Factor 1 (a combination of SPS and SIAS items) was significantly and positively correlated at the 0.01 level with Factor 2 (only SPS items; $r = 0.51$), Factor 3 (a combination of SPS and SIAS items; $r = 0.67$), Factor 4 (only SIAS items; $r = 0.75$), and Factor 5 (a combination of SPS and SIAS items; $r = 0.70$). Factor 2 (only SPS items) was significantly and positively correlated at the 0.01 level with Factor 3 (a combination of SPS and SIAS items; $r = .54$), Factor 4 (only SIAS items; $r = 0.30$), and Factor 5 (a combination of SPS and SIAS items; $r = 0.51$). Factor 3 was significantly and positively correlated at the 0.01 level with Factor 4 (only SIAS items; $r = 0.51$) and Factor 5 (a combination of SPS and SIAS items; $r = 0.62$). Finally, Factor 4 was significantly and positively correlated at the 0.01 level with Factor 5 (a combination of SPS and SIAS items; $r = 0.67$). The finding that all factors for the Caucasian American sample were moderately and significantly related to one another, despite the scales' specific items failing to load onto distinct factors, is perplexing. Not only does this

directly contradict prior research conducted with this population, but it also raises issues concerning the independence of the two scales. If the SPS and SIAS were adequately measuring separate but related constructs in this sample, it seems the items of both scales would have loaded onto separate factors. It may be that in this sample specifically, these two scales do not discriminate between social phobia and social interaction anxiety equally well.

All factors for the Caucasian American sample correlated positively with the STAI-State, STAI-Trait, and BDI-II measures in varying strength (see Appendix B). In other words, as these individuals endorsed more of the items on these five specific factors, they also endorsed more items on the additional measures of distress to a degree. As for the Asian American sample, this finding is reasonable since an elevated experience of social interaction anxiety and social phobia would likely affect an individual's overall mood and other attitudes regarding anxiety in general, theoretically leading to elevated scores on these additional measures of distress.

Similarly, all factors for the Caucasian American sample were also negatively correlated with the SCS-Independent measure, in varying degrees (see Appendix B). This finding suggests that as individuals endorsed more of certain items on the SPS and SIAS, their scores on the measure of independent self-construal decreased. Most notably, for instance, Factor 1 (characterized as “apprehension of social contact”) was correlated moderately and negatively with the SCS-Independent scale ($r = -0.51$), indicating that a more independent self-construal was associated with less apprehension toward social interactions for this group. Likewise, SIAS and SPS total scores were also both negatively and moderately related to SCS-Independent total scores ($r = -0.51$; $r = -0.35$),

respectively. That is, a more independent self-construal was associated with lower levels of self-reported social interaction anxiety and social phobia for this population. Overall, these findings reveal that an independent self-construal is related to lower scores of social anxiety for Caucasian Americans. These findings are supported by prior research. For instance, Kleinknecht and colleagues (1997) found that independent self-construal was inversely related to all social anxiety variables for their United States respondents, in that a more independent self-construal was associated with fewer reports of social anxiety.

An independent self-construal was also related to decreased levels of other psychopathology for the Caucasian Americans in the current study. For instance, significant results for the Caucasian American sample revealed that STAI-Trait total scores were negatively, though weakly, related to MEIM total scores ($r = -0.17$), meaning that higher ethnic identity scores were associated with less reported trait anxiety. Likewise, significant results for the Caucasian American sample also revealed that STAI-Trait total scores were negatively and moderately associated with SCS-Independent scores ($r = -0.40$), in that a higher scores of independent self-construal were related to lower scores of self-reported trait anxiety for this group. BDI-II total scores were also negatively and significantly (though weakly) related to SCS-Independent scores ($r = -0.38$), such that, higher independent self-construal scores were associated with lower, self-reported depressive symptomatology. Though these relationships are not robust, they do indicate that a stronger sense of ethnic identity, particularly an independent self-construal, is related to lower self-reported trait anxiety and depression for Caucasian Americans in this study. As discussed previously, prior research has shown that ethnic

identity is crucial to the psychological well being of individuals from any ethnic group (Phinney & Roberts, 1999).

The negative correlation described above among SCS-Independent scores and BDI-II scores in the Caucasian American sample also illustrates that lower scores of independent self-construal are related to higher scores of self-reported trait anxiety and depressive symptomatology for this group. Research with Caucasian American college students conducted by Bieling and colleagues (2004) supports the idea that a sociotropic worldview (in which individuals place value on close, interpersonal relationships) is positively associated with depression and no such relationship exists among depressive symptomatology and an autonomous worldview (Christopher & Skillman, 2009). Thus, individuals who place significance on interpersonal relations (similar to an interdependent self-construal) over autonomy and independence (similar to an independent self-construal) may be more prone to experiencing depression (Christopher & Skillman, 2009). Indeed, though the present study's Caucasian American participants scored within the normal range of prior research's scores on the SCS (with interdependent subscale scores typically falling between 4.23 - 4.63 and independent subscale scores between 4.60 - 5.07) they were less independently, and more interdependently oriented compared to prior research for this population (Dinnel et al., 2002; Hsu et al., 2007; Kleinknecht et al, 1997; Norasakkunkit & Kalick, 2002; Singelis & Sharkey, 1995). Research by Bieling and colleagues (2004) help explain these results, in which Caucasian Americans with lower independent self-construal scores, who are likely to value interpersonal relations more so than independence, also experience elevated depressive symptomatology.

Significant results for the Caucasian American sample also revealed that MEIM total scores were positively, though weakly, related to SCS-Interdependent scores ($r = 0.18$). This slight association indicates that for Caucasian Americans only, an interdependent self-construal is related to higher scores of ethnic identity. This is contrary to what we would expect from this population, as Caucasian Americans from the United States with a strong sense of ethnic identity are typically thought to possess an independent self-construal. However, it could be that a predisposition (as discussed above) to find higher ethnic identity scores related to an independent self-construal for this group is what readies the interpretation of this finding surprising. It could be that in this study's population of Caucasian Americans, an individual's ability to possess aspects of both types of self-construal, in addition to the ability of an individual's ethnic identity to change over time, influenced these results.

Interestingly, MEIM total scores for the Caucasian American participants in this study were not significantly associated with SPS total scores, SIAS total scores, Factors 1 through 3, or Factor 5. Factor 4, on the other hand, was significantly correlated with MEIM total scores for this group ($r = -0.17$). Factor 4, characterized as "social interaction anxiety," consisted of the three reverse scored items of the SIAS, in addition to two other items that seem to also tap social discomfort. Since all five items of Factor 4 appear to be related to social unease, it seems that for the Caucasian Americans in this study, decreased levels of social discomfort are also related to an increased sense of overall ethnic identity. As mentioned above, Factor 4 was also negatively and moderately correlated with the Independent scale of the SCS ($r = -0.39$). This indicates that as Caucasian Americans endorsed having a more independent self-construal, their

experience of social discomfort (as measured by the items of Factor 4) decreased. Research by Kleinknecht and colleagues (1997) previously discussed supports this finding. Though researchers have argued for the removal of the reverse scored items of the SIAS because of their potential dissimilarity to the scale's other items, the reverse scored SIAS items do seem to relate to at least two others designed to tap social interaction anxiety for the Caucasian American participants in this study. Though this may present an argument for retaining the reverse scored items of the SIAS, these results only further highlight the need for thorough investigation into the relationship between social interaction anxiety and social discomfort as potential dichotomous constructs within the SIAS for Caucasian Americans.

Overall, the results generated by this study for both Caucasian and Asian Americans stresses sensitivity in the future administration of the SPS and SIAS to these ethnic groups. It appears that for the Asian Americans in this study, the SIAS seem to operate adequately in assessing social interaction anxiety. Though a third factor of reverse scored SIAS items was produced in the current study, discrepancies regarding the reverse scored items of the SIAS have been discussed in prior research with Caucasian Americans as well. The SPS items for the Asian American sample in the current study, on the other hand, loaded onto a distinct factor. Though the SPS has often been found to be a 2-factor scale in past research with Caucasian Americans, this finding is not always consistent. Thus, it is reasonable to conclude that both of these self-report scales are assessing social interaction anxiety and social phobia fairly well for the Asian American participants in this study.

The data produced by the EFA for the Caucasian American sample, on the other hand, is significantly different compared to results from prior research in which SIAS items load onto a distinct factor, and SPS items generally comprise two additional factors. The sample in this study may not have been as clinically representative as it should have been to produce such typical EFA loadings for both the SPS and SIAS. Likewise, though other researchers may disagree, the reverse scored items of the SIAS do seem to relate to other items on the SIAS tapping social unease. As such, this data suggests retaining the reverse scored items of the SIAS for Caucasian Americans and continuing to administer the measure to these individuals as is. If the use of the SIAS and SPS in future assessments with Caucasian Americans depended on the results from this study, it would seem that the SPS and SIAS do not distinguish between social interaction anxiety and social phobia equally well for this group, and may not be useful in evaluating these constructs. Had the population of Caucasian Americans in this sample been experiencing more clinical levels of social anxiety symptomatology, as the Asian American individuals demonstrated, the data for the Caucasian American participants may have yielded more common EFA results.

Originally it was hypothesized that these social anxiety self-report scales were biased in favor of the Western respondents they were standardized on. As such, ethnic identity and the self-construal were evaluated for the presence of a relationship among total scores on the SPS and SIAS and total scores on a measure of ethnic identity and self-construal. Social anxiety total scores for Asian Americans, in addition to factors (not including the reverse scored SIAS items), were not related to either subscale of the measure of self-construal or the measure of ethnic identity. This lack of relationship

could potentially be explained by the theoretical variability associated with an individual's ethnic identity over time. For the Asian American participants in this study, higher ethnic identity scores were also related to higher scores of *both* types of self-construal. Although Asian Americans are expected to possess a more interdependent self-construal (as prior research would suggest), these results do not support this trend. As discussed above, it is possible that the worlds of research and clinical practice have created a self-construal that has become traditionally assigned to certain ethnic groups, like Asian Americans. Because of this, scores generated by self-report scales could potentially be interpreted through a culturally biased lens, leading researchers to infer influences of ethnic identity on social anxiety that do not exist for certain ethnic groups. As shown in this study, Asian Americans scored significantly higher than Caucasian Americans on both measures of social anxiety, though there was no link between social anxiety scores and scores on either measure of ethnic identity or self-construal. Asian Americans in this study did score more highly on the SPS and SIAS compared to Caucasian Americans, but this finding was not significantly related to the level of importance they assign to their personal ethnic identity or self-construal. With this in mind, the use of a threshold model for social anxiety may be particularly useful for Asian Americans in interpreting self-report scores on the SPS and SIAS, especially with regard to individuals who self-identity as South-Asian American. Likewise, the use of the threshold model for social anxiety for this minority group is especially relevant clinically, in that normative levels of social anxiety for these individuals, even those who are third generation citizens as shown in the present study, may be higher compared to their Caucasian Americans counterparts. This would likely effect the treatment of these

individuals in a clinical setting and should be kept in mind, perhaps particularly in treating individuals of South-Asian descent. In using these measures to assess social anxiety in a clinical setting for this minority group, the current data suggests proceeding with caution in interpreting SPS and SIAS total scores for these individuals, in addition to being sensitive when inferring cultural differences between this group and others as a result of the generated scores.

For the Caucasian American participants, an independent self-construal seemed to be related to decreased levels of all psychopathology, including social anxiety. Though this finding has been established by prior research, it should be interpreted lightly given that a significant correlation between higher levels of interdependent self-construal and increased levels of ethnic identity was also found. Thus, salience of ethnic identity was elevated only for those who endorsed valuing interpersonal relationships over independence and autonomy as indicated on the interdependent subscale of the SCS. These results directly contradict the findings for the Asian American participants, in which self-construal was not significantly related to social anxiety scores. The predisposition (as discussed above) to find higher ethnic identity scores related to an independent self-construal for Caucasian Americans (as often found in prior research) may be what primes this finding to be surprising. As for Asian Americans, a Caucasian American's ability to possess aspects of both types of self-construal, in addition to the ability of his/her ethnic identity to change over time, may have influenced this result. As such, grouping Caucasian Americans into the independent self-construal subtype in the world of research and clinical practice may be misleading. Moving forward, an individual's ethnic identity, self-construal, and their subsequent effect on social anxiety

scores specifically, should be interpreted on a continuum and analyzed as such for both ethnic groups.

Limitations

Several limitations of the current study must be recognized. Firstly, the current participant population was recruited from online resources and areas surrounding a university community. Thus, the participants in the present sample were not clinically identified as suffering from social anxiety. A clinical sample of individuals diagnosed with social anxiety could produce different scores on these measures and different relationships between these measures. Additionally, the present participant sample is not entirely representative of the Asian American population at large, as the majority of the Asian Americans in this study identified as “South-Asian” (primarily from India). Thus, results cannot be interpreted as generalizable to all Asian Americans, and future research should attempt to recruit and administer these measures to a variety of other Asian American ethnicities.

Similarly, the measures in this study (though reliable and validated) were self-report scales. Data generated by self-report measures is always susceptible to response biases, with participants wanting to respond in a socially desirable manner despite the anonymity of the questionnaires. Additionally, these scales prompt respondents to recall past experiences of anxiety, which may be remembered as more intense, or less intense, than they were at the time. Results must be interpreted with caution as a result of this.

Future Directions

This type of research is crucial in order for other cultural versions of social anxiety to be discovered and explored. The perplexing factor structure of the Caucasian American sample in this study also leaves many questions unanswered. Failing to replicate a factor structure similar to prior research for this population encourages the use of a larger, more representative sample of Caucasian Americans in future research. As prior research has noted, direct sample-to-sample comparisons of raw scores on measures like those used in this study is difficult due to the unclear semantic equivalence of scale items and the ambiguous cultural equivalence of scores (Kleinknecht et al., 1997). Thus, the nature of the relationship between this study's variables still leaves much to be discovered.

Additionally, the current self-report scales used in the current study do not allow for respondents to indicate the level of impairment they feel results from their individual experiences of symptoms and situations related to social anxiety. Future studies may attempt to investigate this further by defining and validating additional, open-ended questions to these measures in order to glean a more comprehensive, representative picture of an individual's impairment. Similarly, using measures in the ethnic group's native language could better facilitate data collection and inevitably glean more accurate results. Incorporating a measure of acculturation into the future design of a similar study would also undoubtedly produce interesting results that could be analyzed in relation to an individual's ethnic identity and level of impairment. Finally, this study shed light on the shortcomings of potentially categorizing an individual with a concrete self-construal. Research may benefit from embracing a more eclectic view of the self-construal, and

investigating how the self-construal, and an individual's ethnic identity, changes throughout adolescence and adulthood. Likewise, further research on biculturalism and its effect on an individual's self-construal as it mediates the experience of social anxiety for individuals of Asian American descent could shed more light on this topic.

Despite the above-mentioned limitations, the current study's findings should spark interest in further investigating the measurement equivalence of commonly used social anxiety measures across cultures, in addition to the effect an individual's ethnic identity may have on the manifestation of social anxiety symptomatology. It is hoped that this study will stimulate additional research in these fields to yield a more thorough understanding of these phenomenon.