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The structure of feared social situations among race-ethnic minorities and Whites with social anxiety disorder in the United States

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Abstract

We investigated feared social situations in individuals with social anxiety disorder from different racial and ethnic groups in the United States. The sample included 247 African Americans, 158 Latinos, and 533 non-Latino Whites diagnosed with social anxiety disorder within the past 12 months from the integrated Collaborative Psychiatric Epidemiology Studies data set. After randomly splitting the full sample, we conducted an exploratory factor analysis with half of the sample to determine the structure of feared social situations in a more diverse sample than has been used in previous studies. We found evidence for a model consisting of three feared social domains: performance/public speaking, social interaction, and observational. We then conducted a confirmatory factor analysis on the remaining half of the sample to examine whether this factor structure varied significantly between the race-ethnic groups. Analyses revealed an adequate fit of this model across all three race-ethnic groups, suggesting invariance of the factor structure between the study groups. Broader cultural contexts within which these findings are relevant are discussed, along with important implications for comprehensive, culturally sensitive assessment of social anxiety.

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Keywords

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Social anxiety disorder (SAD) is characterized by the fear of negative evaluation or embarrassment in social situations. It is associated with high rates of psychiatric comorbidity (Grant et al., 2005) as well as substantial distress and impairment across domains of functioning (Grant et al., 2005; Patel, Knapp, Henderson, & Baldwin, 2002; Ruscio et al., 2008). A recent review of the cultural expression of SAD recommends that the person's sociocultural background should be carefully taken into consideration when evaluating social behaviors and attitudes (Hofmann, Asnaani, & Hinton, 2010). The issue of culture is of particular importance in the recently published DSM-5 because of the Task Force's focus on social situations, which are often culturally dependent. Specifically, it had been suggested to delete the "generalized subtype" and to instead only consider a "performance only" specifier if the fear is restricted to speaking or performing in public (Bögels et al., 2010). A second recommendation was to expand Criterion A by including the fear of performance, social interaction, and situations that involve being observed.

Consistent with this second recommendation, a study with primarily White individuals employing exploratory and confirmatory factor analyses used data from the National Comorbidity Survey Replication (NCS-R) and the Canadian Community Health Survey on Mental Health and Well Being (Cox, Clara, Sareen, & Stein, 2008), and found a three-factor model of SAD for those with a lifetime diagnosis of the disorder in the NCS-R data ($n=1,123$). This three-factor solution consisted of: (a) social interaction fears (e.g., meeting new people, talking to people you do not know), (b) public speaking fears (e.g., speaking in class, acting, or performing), and (c) observational social fears (e.g., working while being watched, using a public bathroom). This result was cross-validated and confirmed in the portion of the Canadian sample with a similar lifetime diagnosis of SAD ($n=3,091$). These epidemiological data sets represent two of the largest studies of psychopathology prevalence in the general populations of North America (Kessler & Merikangas, 2004; Tempier et al., 2009).

These factor models have enhanced our understanding of the underlying core domains of social anxiety and provided information about, and empirical evidence for, the heterogeneity among individuals given a diagnosis of SAD. This information has the potential to allow us to better identify particular subtypes of SAD and better target the fears most relevant to these subtypes in treatment. However, despite these advances, little attention has been focused on racial and ethnic differences in the structure of feared social situations in SAD. This is a particularly important limitation in the literature in light of recent findings from several large-scale epidemiological surveys suggesting that there are significant differences in the presentation, prevalence, impairment, and rates of treatment utilization between individuals diagnosed with SAD who are from different racial and ethnic groups. For example, there is considerable evidence for a lower reported prevalence of SAD in ethnic minority groups such as African Americans (including those of Caribbean origin), Latinos, and Asian

Americans (Asnaani, Richey, Dimaite, Hinton, & Hofmann, 2010; Breslau et al., 2006; Grant et al., 2005; Himle, Baser, Taylor, Campbell, & Jackson, 2009; Ruscio et al., 2008) as compared to the majority White group within the United States. Despite these observed lower prevalence rates, others have found that individuals from certain minority groups meeting criteria for anxiety disorders actually present with a greater degree of impairment from these symptoms than their White counterparts (Himle et al., 2009). Moreover, the perception of racial discrimination is associated with psychopathology in minority groups (Chou, Asnaani, & Hofmann, 2012), and ethnic-minority groups show a distinctly lower rate of treatment utilization for SAD symptoms (Wang et al., 2005).

These findings suggest a need to develop interventions that are more sensitive to cultural aspects of SAD. Better understanding the structure of SAD among various ethnic minority groups could allow us to improve multiple components of the treatment process. For example, one possible explanation for the lower prevalence rates in minority groups is that current assessment methods for SAD may fail to adequately assess for social fears of most importance across groups (Hofmann et al., 2010). That is, previous studies have indicated that specific social situations are more or less salient/important in certain cultural groups, due to the overall cultural values of that group, for example, fear of offending others in collectivistic societies, or high expectations for public performance in allocentric, individualistic societies where individual achievement is more highly regarded (Heinrichs et al., 2006; Stein, 2009). Evidence for a varying factor structure of SAD across race-ethnic groups would inform areas in need of emphasis when diagnosing this disorder in patients from ethnic minority groups. Similarly, structure of SAD would inform which fears are targeted during exposure exercises when treating patients from these groups.

In this study, we investigated potential differences in the factor structure of feared social situations for Latinos, African Americans, and non-Latino Whites in the Collaborative Psychiatric Epidemiology Studies (CPES) data set. The CPES contains data from three national surveys of mental health, two of which over-sampled for minorities, and therefore includes a significantly greater number of minority group members than the NCS-R alone. The aims of the current investigation were to (a) replicate the factor structure derived from the NCS-R data by Cox et al. (2008) in individuals with a current diagnosis of SAD using a more comprehensive data set, and (b) to examine differences in the factor structure of social anxiety disorder across various race-ethnic groups.

Methods

Participants

The present study utilized data drawn from the CPES data set. The CPES is described here briefly; for a more detailed account of study methods, see Heeringa et al. (2004). The CPES is funded by the National Institute of Mental Health and the data were collected between May 2002 and November 2003. This integrated data set consists of three national surveys of Americans' mental health: the NCS-R, the National Study of American Life (NSAL), and the National Latino and Asian American Study of Mental Health (NLAAS). The survey population in the NCS-R was comprised of adults (18 years old), residing in households in the coterminous United States. Exclusionary criteria applied for individuals who were

institutionalized, living on military bases, or were non-English speakers. A four-stage national area probability sample framework was used to obtain data for the NCS-R, which is designed to be a cross-sectional replication of the original 1993 National Comorbidity Survey (NCS; Kessler, McGonagle, Zhao, & Nelson, 1994; Kessler & Merikangas, 2004). The NCS-R screening interview was completed by 11,222 households, resulting in an initial 98% response rate. Interviews were conducted in person with 9,282 respondents (47.4% male; 52.6% female) with the mean age of respondents equaling 44.73 years ($SD=17.5$), and a response rate of 70.9% (Kessler & Merikangas, 2004).

The NSAL was designed to be similar in its design and inclusionary/exclusionary criteria to the NCS-R. This study was added to the CPES in order to obtain information from Afro-Caribbean adults, a group that was not represented in the NCS-R. A similar four-stage national area probability sampling procedure as employed in the NCS-R was utilized to collect the data, with the addition of the special supplement for Afro-Caribbean adults. The final sample survey for the NSAL consisted of 3,570 African Americans, 1,006 non-Hispanic Whites, and 1,623 African American adults of Caribbean descent, for a total interviewed sample of 6,199 participants, with an overall response rate of 71.5% (Heeringa et al., 2004).

The third constituent of the integrated data set is the NLAAS, which also supplemented the other two data sets by oversampling individuals of Latino and Asian descent residing in the US. Of note, participants included individuals whose primary language was English, Spanish, or one of three Asian languages (Chinese, Vietnamese, or Tagalog), and this was the only survey in the CPES combined data set that utilized trained bilingual interviewers to conduct the full assessment in one of these five languages, as compared to English-only assessments in the NCS-R and NSAL. Specifically, respondents in the NLAAS were adults over the age of 18 who were living in the coterminous US, Alaska, and Hawaii. Exclusion criteria were the same as for the NCS-R and the NSAL. Additionally, the study utilized a similar four-stage national area probability sample with special supplements for adults of Puerto Rican, Cuban, Chinese, Filipino, and Vietnamese origin.

The general data collection methodology was similar across the three data sets: first, study procedures were explained to all participants and written informed consent was obtained from the respondents in English (NCS-R and NSAL), or their preferred language (NLAAS; Alegría et al., 2007). Following this, trained interviewers conducted face-to-face interviews with all participants in the core and high-density samples (as described below), unless a telephone interview was conducted with the respondent in some cases. Participants were recontacted at random to ensure quality control in each survey and to validate the data. In this vein, an initial \$50.00 incentive was later increased to \$150.00 to address nonresponse (Abe-Kim et al., 2007).

As noted earlier, the sampling procedure for all three surveys has been documented elsewhere (Alegría et al., 2007; Heeringa et al., 2004). Briefly, there were four stages: (a) core sampling, in which primary sampling units and secondary sampling units were selected with probability proportionate to size; (b) high-density supplemental sampling to oversample census block groups with 5% or greater density of target ancestry/racial groups; (c)

screening of a random selection of housing units (using predetermined sampling rate) within each designated sampling unit to determine satisfaction of study eligibility criteria, which was followed by random selection of one respondent from each household to complete the study interview; (d) second respondent sampling to recruit participants from households in which one eligible member had already been interviewed. Weighting correlations were developed to take into account the joint probabilities for selection under the four components of the sample design (Abe-Kim et. al., 2007).

Measures

All the surveys of the CPES utilized the World Mental Health Survey Initiative Version of the World Health Organization Composite International Interview (WMH-CIDI), a fully structured lay-administered diagnostic interview that determines clinical diagnoses based on DSM-IV criteria (Alegría et al., 2007). The WMH-CIDI has been shown to be highly concurrent with independent diagnoses on other valid semistructured interviews such as the Structured Clinical Interview for DSM-IV (SCID), in the range of 83–88% concordance (Haro et al., 2006). In addition, Haro et al. (2006) have shown that estimates of disorder prevalence tend to be more conservative on the WMH-CIDI, therefore minimizing artificial inflation of prevalence rates.

In terms of the social anxiety module of the WMH-CIDI, there is evidence of good concurrent validity with the continuous classification of social anxiety on the SCID (74%; Haro et al., 2006). This module of the WHM-CIDI assesses whether participants ever felt “very shy, afraid or uncomfortable” in a variety of social situations, such as meeting new people, working while being observed, being on a date, or talking with authority. A total of 13 social situations were surveyed in this module (consistent with the range of social situations outlined in the social anxiety disorder section of the DSM-IV), and participants were further assessed for level of distress and impairment related to their fears of negative evaluation. The diagnoses in earlier versions of the English and Spanish WMH-CIDI diagnostic assessments were consistent with the diagnosis made independently by trained clinical interviewers (Rubio-Stipec, Peters, & Andrews, 1999; Wittchen, 1994).

For the current study, we focused on individuals endorsing past-year clinical threshold for SAD in each of three racial-ethnic groups: the Latino subgroup ($n=158$), which consisted of all respondents identifying as Puerto Rican, Cuban, Mexican, or other Hispanic ancestry with the exception of Spanish and Portuguese; the African American subgroup ($n=247$), which included all origins with the exception of Caribbean African; and the non-Hispanic White subgroup ($n=533$). These ethnic/racial groups were selected on basis of established shared cultural similarities among the respondents in each group (Latino subgroup: Arredondo, Gallardo-Cooper, Delgado-Romero, & Zapata, 2014; African Americans: Bryant, 2003; non-Hispanic White Americans: Lewis-Fernández et al., 2010; Okazaki, 1997). Unfortunately, those identifying as Asian American could not be included as a subgroup in the proposed analyses because there were too few individuals ($n=48$) in this racial group who had met diagnostic criteria for SAD within the last 12 months.

Statistical analyses

To examine the structure of social anxiety among minority groups, we used a two-step approach combining exploratory and confirmatory factor analysis similar to the factor analysis strategy utilized by Cox et al. (2008). First, we randomly split the total sample ($N=938$) in half. We conducted an exploratory factor analysis on one half of the sample, using generalized least squares and oblique (promax) rotation. Factors were extracted when eigenvalues were greater than 1, and items with cross-loadings or factor loadings lower than 0.3 were removed. In addition, to control for spurious eigenvalues, we used a Monte Carlo parallel analysis, which has been found to produce better estimates of the number of true underlying factors (O'Connor, 2000). Specifically, we generated 1,000 parallel data sets using the Monte Carlo procedure, based on permutations of our data. In the second step, we used the solution from the exploratory factor analysis, and examined it using confirmatory factor analysis in the second split-half of the sample. In the confirmatory factor analysis, correlations between factors were specified, items were not allowed to cross-load on more than one factor, and errors were not allowed to covary. We used maximum likelihood (ML) estimation and assessed model fit using the following fit indices: the incremental fit index (IFI; Bollen, 1989), the comparative fit index (CFI; Bentler, 1990), and the root mean square error of approximation (RMSEA; Steiger, 1980). Models are said to fit the data well when the IFI and CFI are $>.90$ (Bentler, 1990), and the RMSEA is $<.08$ (Bentler & Bonett, 1980). Finally, we evaluated the model for each of the three race-ethnic groups separately, to examine potential differences between them.

Results

Sample characteristics

First, we wanted to determine whether there were other meaningful differences on key variables between the race-ethnic groups. These variables included general demographic characteristics of the sample, namely mean age, gender (% female), highest level of education obtained, and household annual income. Further, it was of interest to assess for differences in acculturation between the groups, given the significant evidence for its impact on symptom report (Hwang & Ting, 2008). Unfortunately, while an eight-item measure of acculturative stress was administered in one of the data sets (NLAAS), this was not routinely assessed across all the data sets in the CPES, thereby resulting in too few responses in the current sample to be adequately analyzed. Instead, number of years of residence in the United States was considered as a reasonable proxy for acculturation, in light of the absence of another direct measure of this construct.

Analyses revealed that White Americans reported a significantly higher level of completed education (13–15 years) versus Latinos and African Americans (both 12 years; $\chi^2=60.73$, $df=2$, $p<.001$). Similarly, White Americans reported a higher annual income (\$51,736 vs. \$31,453, and \$39,687, $F=20.43$, $df=2,935$, $p<.001$) than African Americans and Latinos, respectively, who did not differ significantly from each other. The African American group had a significantly higher proportion of women (73.3%) than Latinos (61.4%) or White Americans (61.2%), respectively ($\chi^2=16.79$, $df=2$, $p<.001$). The Latino subgroup had a significantly lower proportion of U.S. born respondents (52.9%) compared to both the

African American subgroup (98.3%) and the White American subgroup (98.5%; $\chi^2=321.33$, $df=2$, $p<.001$). Thus, the number of years of residence in the US was significantly greater for both the African American subgroup and the White American subgroup, compared to the Latino subgroup ($\chi^2=152.01$, $df=2$, $p<.001$). There were no significant differences in age distribution between the groups.

Factor analysis

The exploratory factor analysis on a split-half of the total sample yielded three factors with eigenvalues over 1 (eigenvalues=3.61, 1.39, and 1.28; explained variance =27.8%, 10.7%, and 9.8%), that were comprised of 10 of the 13 items assessed in the survey. One item (“entering room with others present”) cross-loaded on two factors, and two items (“authority figures” and “disagreeing with others”) did not have loadings greater than .30 on any of the three factors. Thus, after removing these three items, 10 items comprised the final model. The three factors identified were labeled: (a) Performance/Public Speaking Fears (speaking in a meeting/class, performing in front of an audience), (b) Social Interaction Fears (meeting new people, going to parties or social gatherings, being in a dating situation, talking to unfamiliar people), and (c) Observational Fears (using a public bathroom, taking an impromptu exam, writing/eating/drinking in front of others, working while being observed). The factor loadings are presented in Table 1. The correlations between the factors were as follows: Public Speaking with Social Interaction=.37, Public Speaking with Observational=.43, and Social Interaction with Observational=.56. This is highly similar to the factor structure found in the previous examination of the NCS-R data (Cox et al., 2008).

To ensure that our exploratory factor analysis did not identify an excessive number of factors we conducted a Monte Carlo parallel analysis. Results indicated that the highest eigenvalue was 2.88 and was greater than the eigenvalue in the 95th percentile of randomly generated parallel data sets (.41) indicating that this factor is statistically significant. Similarly, the second highest eigenvalue was .65 and was also significant (i.e., greater than the eigenvalue in the 95th percentile of randomly generated parallel data sets: .32). Finally, the third highest eigenvalue was .52 and was greater than the eigenvalue in the 95th percentile of randomly generated parallel data sets (.24), indicating its statistical significance. However, the fourth highest eigenvalue was .188 and was not greater than the eigenvalue in the 95th percentile of randomly generated parallel data sets (.189). This indicates that the number of significant factors in our data set is three.

The confirmatory factor analysis based on the second split-half of the sample indicated an adequate model fit (IFI=.931, CFI=.929, RMSEA=.059, 90% CI for RMSEA=[.05, .07]) and all parameter estimates were significant. The confirmatory factor analysis model, its factor loadings, and the correlations between the factors are presented in Figure 1. We also examined whether this model was a good fit for all three ethnic-racial groups. We found the model to have an adequate fit with each of the three groups separately (non-Latino Whites: IFI=.933, CFI=.931, RMSEA=.055, 90% CI for RMSEA=[.04, .07]; Latinos: IFI=.948, CFI=.944, RMSEA=.057, 90% CI for RMSEA=[.02, .09]; and African Americans: IFI=.917, CFI=.912, RMSEA=.063, 90% CI for RMSEA=[.04, .09]).

Discussion

The results of this study revealed three factors of fears in social anxiety disorder: social interaction fears, public speaking fears, and observational fears. These results support the modifications made to the DSM-5 to include the fear of performance, social interaction, and observation situations in Criterion A of the diagnosis of this disorder. The findings further replicate the factor structure of the Cox et al. (2008) study with largely the same item loadings in each of these domains. In addition, this factor structure was confirmed in the second half of this data set, and of most interest, this factor structure appeared to be an adequate model for social anxiety across all three race-ethnic groups examined. Finally, although there were several significant demographic differences across the race-ethnic groups, these did not impact the fit of the factor structure derived from the exploratory factor analysis for the three race-ethnic groups.

These results point to a stable factor structure for SAD, regardless of racial group membership, which directly contributes to our understanding about the prevalence differences observed widely in SAD across racial groups (Asnaani et al., 2010; Grant et al., 2005). That is, an oft-cited explanation of prevalence differences is that our assessment methods might inherently be biased to emphasize or capture SAD symptoms that are most relevant to the majority White population. The current findings in one of the largest, most diverse epidemiological data sets do not support this hypothesis. Indeed, having evidence for a similar structure of social fear in African Americans and Latinos (which represent the two largest minority race-ethnic groups in the United States) provides a clearer understanding of how social anxiety pathology is manifested similarly across these groups. However, it must be noted that, by relying on data obtained from the WMH-CIDI, we were able to assess the factor structure in only a limited set of fears. Accordingly, although these data fail to support any differences between racial-ethnic groups in the structure of social fears, it will be important for future research to determine whether this factor structure is maintained using more ideographic approaches to the assessment of social fears across racial and ethnic groups.

In this vein, it is important to note that the three race-ethnic groups examined in the current study were devised from groupings of ethnicities considered to be most similar to each other. Specifically, individuals who were of Spanish or Portuguese origin were excluded from the rest of the Latino group, in order to more accurately capture the higher degree of cultural overlap among the other represented Latino groups (Arredondo et al., 2014). In addition, individuals identifying as Afro-Caribbean were excluded from the African American group given the distinctly different cultural variation between these two cultures (Bryant, 2003). As a result, the racial groups served as a proxy for culture, which has been observed as the more likely source of variance in diagnosis, conceptualization, and assessment of social anxiety in various populations over simply one's racial membership (Lewis-Fernández et al., 2010). Thus, the current findings with these examined racial groups are important to place against the backdrop of broader cultural contexts in social anxiety.

For instance, it has been well established that various cultural constructs play a role in the presentation of social anxiety symptoms; for example, the degree of collectivism or

individualism inherent to a cultural group impacts the extent to which one feels like social norms have been violated, and the costs associated with such deviance from the established social rules (Singelis, 1994; also related, the idea of independent and interdependent self-construals: Caldwell-Harris & Alicke, 2006). Similarly, identification with a particular culturally established gender role in society has been shown to predict the level of perceived social anxiety (Moscovitch, Hofmann, & Litz, 2005). Shame has also been shown to play a key role in the way social anxiety is experienced across cultures (Okano, 1994). Indeed, cultures that emphasize the importance of shame in evaluating one's own contribution to the social group can influence the level of social anxiety experienced, and this factor can be positive or negative depending on the specific cultural function of this emotion (Zhong et al., 2008). Therefore, for us to fully understand how social anxiety disorder may be captured differentially across cultures, there must be an appreciation for how these aspects, among others, uniquely impact diagnostic endorsement of this disorder (Hofmann et al., 2010).

Nevertheless, this study offers several unique and distinct strengths as compared to other factor analytic studies of its kind. Most notably, this is the first time to our knowledge that exploratory and confirmatory factor analyses were conducted and compared in separate race-ethnic groups. This is largely possible because the CPES is an integrated database that not only provides a depth of diagnostic information on a representative population of the United States, but also includes a much needed oversampling of Latino Americans and African Americans to directly counter the traditional methodological problems of unequal sample sizes typically encountered with research on minority racial groups. Further, all three CPES datasets used the WMH-CIDI, which has been shown to be a highly reliable and valid diagnostic instrument for the assessment of DSM-IV disorders (Haro et al., 2006). This allowed us to examine factor structure of social anxiety assessed in a fashion consistent with clinical evaluation, as compared to an analogue measure of social anxiety.

In this regard, the use of the WMH-CIDI also poses several limitations to the current study. For instance, the factor structure was only examined in those individuals actually meeting DSM-IV criteria for SAD using this instrument, and as mentioned above, there is evidence that DSM criteria do not capture the diversity in conceptualization of social anxiety across cultures (Hofmann et al., 2010). Thus, while the current study results support stability of the factor structure of social anxiety disorder diagnosis across major race-ethnic groups, it is still limited to an assessment of the disorder based on the DSM. Indeed, given that only 13 social situations were assessed in the current study, other social situations not fitting into the factors observed, along with other variables mentioned previously and others such as beliefs about mental illness, religious values, and language used to describe fear, could have affected the composition of our identified cases of current SAD in the three groups (Johnson et al., 2007; Paradis, Hatch, & Friedman, 1994). In addition, presence of acculturative stress (which refers to the stress caused by adjusting to a new cultural environment) has been suggested as being implicated in higher psychological distress (Hwang & Ting, 2008), although its independent impact on mental health outcome is unclear. This makes it an important additional variable to examine in future studies. A measure of acculturative stress was utilized in two of the three datasets, but had to be omitted as a covariate in the analysis because it was not administered in the NCS-R, which provided data for the White racial group. Taken together, our assessment of social fears must move to a more comprehensive,

and cross-racially sensitive model in future prevalence examinations, to ensure we examine factor structure in the most representative samples of SAD.

Indeed, there are several established and widely observed cultural variants of social anxiety disorder, including *Taijin Kyofusho* (TKS) which, broadly speaking, involves a fear of offending or embarrassing others. TKS also has four of its own more specific subtypes that include a fear of blushing in front of others and a fear of eye-to-eye contact (Suzuki, Takei, Kawai, Minabe, & Mori, 2003). While this cultural variant of SAD has been studied primarily in East Asian cultures, several studies have now shown that a significant number of individuals from Western, allocentric communities endorse TKS symptoms at a comparable rate to DSM-based symptoms of SAD (Hofmann et al., 2010). However, such criteria are not currently included in our traditionally employed measures of social anxiety, such as the one examined here. Another cultural variant with considerably less empirical investigation across cultures is *aymat zibur* (as seen in the ultra-Orthodox Jewish community), which is a fear of not meeting expectations for one's role in the community/performing religious rites adequately. Again, given that our current assessment tools do not investigate specific symptoms of such variants of social anxiety, it is possible that they may not be sensitive to other differences across race-ethnic and cultural groups.

Despite these shortcomings, the current study paves the way for numerous meaningful directions to further expand our knowledge of minority mental health. First, our findings suggest that the current DSM-based assessment of SAD is adequate to capture symptoms of this disorder across a variety of race-ethnic groups, at least from a more Western conceptualization of social anxiety. However, it is important to appreciate that the sample studied was obtained completely from the United States, and therefore, cultural modifications may be needed for assessment of SAD in other countries. For instance, it has been noted that several other studies using non-American samples have found prevalence rates for social anxiety disorder to be markedly different to the rates found in large-scale epidemiological studies in the US (Kawakami et al., 2005; WHO World Mental Health Survey Consortium, 2004). Therefore, it would be helpful to examine the factor structure within these populations in their native settings, to compare how this may look different or similar to the factor structures observed in the minority racial groups in the United States.

Furthermore, even within the United States, each individual's degree of acculturation to American culture or identification with one's non-American native culture can influence the endorsement and recognition of social anxiety symptoms (Hwang & Ting, 2008). In addition, while racial group membership served as a proxy for culture in this study, the subgroups included within each race/ethnic group are certainly not fully homogenous in terms of individual cultural values, despite high degree of cultural overlap (e.g., Mexican culture and rates of anxiety pathology are not identical to Puerto Rican culture and prevalence of anxiety disorders; Alegria et al., 2007). This within-racial-group heterogeneity highlights the importance of incorporation of measures directly assessing cultural values in cross-cultural psychopathology studies. Finally, the current study only revealed 48 current cases of SAD in the Asian subgroup, thereby unfortunately excluding this group. As noted by many, SAD is of particular interest in this racial group given the presence of TKS and its associated cultural variants in Asian cultures (Choy, Schneier, Heimberg, Oh, & Liebowitz,

2008; Hofmann et al., 2010), and the distinct underendorsement of psychopathology symptoms in general in this minority group, even in comparison to African Americans and Latinos (Asnaani et al., 2010). It would therefore be valuable for future studies of factor analysis of SAD to include Asian Americans in their models, to provide us with an idea of whether DSM social anxiety fear domains look similar in this cultural group.

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Naomi Simon, MD, MSc, is Director of the Center for Anxiety and Traumatic Stress Disorders, Director of the Complicated Grief Program at MGH, and Associate Professor of

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Donald Robinaugh, MA, is graduate student in clinical psychology in the Department of Psychology at Harvard University and a clinical psychology fellow at Massachusetts General Hospital and Harvard Medical School. Mr. Robinaugh researches the etiology and treatment of mental disorders that develop following traumatic or highly negative life events. His current work examines how the complex and dynamic relationships among symptoms contribute to the development and maintenance of mental disorders. His published works focus on cognitive vulnerabilities that contribute to mood and anxiety disorders, with a particular focus on the role of autobiographical memory and prospection in complicated grief and posttraumatic stress disorder.

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References

- Abe-Kim J, Takeuchi DT, Hong S, Zane N, Sue S, Spencer MS, ... Alegría M. Use of mental health-related services among immigrant and US-born Asian Americans: Results from the National Latino and Asian American Study. *American Journal of Public Health*. 2007; 97(1):91–98. [PubMed: 17138905]
- Alegría M, Mulvaney-Day N, Woo M, Torres M, Gao S, Oddo V. Correlates of past-year mental health service use among Latinos: Results from the National Latino and Asian American Study. *American Journal of Public Health*. 2007; 97(1):76–83. [PubMed: 17138911]
- Arredondo, P., Gallardo-Cooper, M., Delgado-Romero, EA., Zapata, AL. Culturally responsive counseling with Latinas/os. Alexandria, VA: American Counseling Association; 2014.
- Asnaani A, Richey JA, Dimaite R, Hinton DE, Hofmann SG. A cross-ethnic comparison of lifetime prevalence rates of anxiety disorders. *Journal of Nervous and Mental Disease*. 2010; 198:551–555. [PubMed: 20699719]
- Bentler PM. Comparative fit indexes in structural models. *Psychological Bulletin*. 1990; 107(2):238–246. [PubMed: 2320703]
- Bentler PM, Bonett DG. Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*. 1980; 88(3):588–606.
- Bögels SM, Alden L, Beidel DC, Clark L, Pine DS, Stein MB, ... Voncken M. Social anxiety disorder: Questions and answers for the DSM-V. *Depression and Anxiety*. 2010; 27(2):168–189. [PubMed: 20143427]

- Bollen, KA. Structural equations with latent variables. Oxford, UK: John Wiley & Sons; 1989.
- Breslau J, Aguilar-Gaxiola S, Kendler KS, Su M, Williams D, Kessler RC. Specifying race-ethnic differences in risk for psychiatric disorder in a USA national sample. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences*. 2006; 36:57–68.
- Bryant S. Making culture visible: An examination of birthplace and health status. *Health Care for Women International*. 2003; 24(2):103–114. [PubMed: 12746020]
- Caldwell-Harris CL, Ayc,ic,egi A. When personality and culture clash: The psychological distress of allocentrics in an individualist culture and idiocentrics in a collectivist culture. *Transcultural Psychiatry*. 2006; 43(3):331–361. [PubMed: 17090622]
- Chou T, Asnaani A, Hofmann SG. Perception of racial discrimination and psychopathology across three US ethnic minority groups. *Cultural Diversity and Ethnic Minority Psychology*. 2012; 18:74–81. [PubMed: 21967527]
- Choy Y, Schneier FR, Heimberg RG, Oh K, Liebowitz MR. Features of the offensive subtype of Taijin-Kyofu-Sho in US and Korean patients with DSM-IV social anxiety disorder. *Depression and Anxiety*. 2008; 25(3):230–240. [PubMed: 17340609]
- Cox BJ, Clara IP, Sareen J, Stein MB. The structure of feared social situations among individuals with a lifetime diagnosis of social anxiety disorder in two independent nationally representative mental health surveys. *Behavior Research and Therapy*. 2008; 46:477–486.
- Grant BF, Hasin DS, Blanco C, Stinson FS, Chou S, Goldstein RB, ... Huang B. The epidemiology of social anxiety disorder in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*. 2005; 66(11):1351–1361. [PubMed: 16420070]
- Haro J, Arbabzadeh-Bouchez S, Brugha TS, De Girolamo G, Guyer ME, Jin R, ... Kessler RC. Concordance of the Composite International Diagnostic Interview Version 3.0 (CIDI 3.0) with standardized clinical assessments in the WHO World Mental Health Surveys. *International Journal of Methods in Psychiatric Research*. 2006; 15(4):167–180. [PubMed: 17266013]
- Heeringa SG, Wagner J, Torres M, Duan N, Adams T, Berglund P. Sample designs and sampling methods for the Collaborative Psychiatric Epidemiology Studies (CPES). *International Journal of Methods in Psychiatric Research*. 2004; 13:221–240. [PubMed: 15719530]
- Heinrichs N, Rapee RM, Alden LA, Bögels S, Hofmann SG, Oh K, ... Sakano Y. Cultural differences in perceived social norms and social anxiety. *Behaviour Research and Therapy*. 2006; 44(8):1187–1197. [PubMed: 16325145]
- Himle JA, Baser RE, Taylor RJ, Campbell RD, Jackson JS. Anxiety disorders among African Americans, Blacks of Caribbean descent, and non-Hispanic Whites in the United States. *Journal of Anxiety Disorders*. 2009; 23:578–590. [PubMed: 19231131]
- Hofmann SG, Asnaani A, Hinton DE. Cultural aspects in social anxiety and social anxiety disorder. *Depression and Anxiety*. 2010; 27:1117–1127. [PubMed: 21132847]
- Hwang W, Ting JY. Disaggregating the effects of acculturation and acculturative stress on the mental health of Asian Americans. *Cultural Diversity and Ethnic Minority Psychology*. 2008; 14(2):147–154. [PubMed: 18426287]
- Johnson MR, Hartzema AG, Mills TL, De Leon JM, Yang M, Frueh C, ... Santos A. Ethnic differences in the reliability and validity of a panic disorder screen. *Ethnicity & Health*. 2007; 12(3):283–296. [PubMed: 17454101]
- Kawakami N, Takeshima T, Ono Y, Uda H, Hata Y, Nakane Y, ... Kikkawa T. Twelve-month prevalence, severity, and treatment of common mental disorders in communities in Japan: Preliminary finding from the World Mental Health Japan Survey 2002–2003. *Psychiatry and Clinical Neurosciences*. 2005; 59(4):441–452. [PubMed: 16048450]
- Kessler RC, McGonagle KA, Zhao S, Nelson CB. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Study. *Archives of General Psychiatry*. 1994; 51:8–19. [PubMed: 8279933]
- Kessler RC, Merikangas KR. The National Comorbidity Survey Replication (NCS-R): Background and aims. *International Journal of Methods in Psychiatric Research*. 2004; 13(2):60–68. [PubMed: 15297904]

- Lewis-Fernández R, Hinton DE, Laria AJ, Patterson EH, Hofmann SG, Craske MG, ... Liao B. Culture and the anxiety disorders: Recommendations for DSM-V. *Depression and Anxiety*. 2010; 27(2):212–229. [PubMed: 20037918]
- Moscovitch DA, Hofmann SG, Litz BT. The impact of self-construals on social anxiety: A gender-specific interaction. *Personality and Individual Differences*. 2005; 38(3):659–672.
- O'Connor BP. SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation, and Computers*. 2000; 32:396–402.
- Okano K. Shame and social phobia: A transcultural viewpoint. *Bulletin of the Menninger Clinic*. 1994; 58(3):323–338. [PubMed: 7920372]
- Okazaki S. Sources of ethnic differences between Asian American and White American college students on measures of depression and social anxiety. *Journal of Abnormal Psychology*. 1997; 106(1):52–60. [PubMed: 9103717]
- Paradis CM, Hatch M, Friedman S. Anxiety disorders in African Americans: An update. *Journal of the National Medical Association*. 1994; 86(8):609–612. [PubMed: 7932839]
- Patel A, Knapp M, Henderson J, Baldwin D. The economic consequences of social phobia. *Journal of Affective Disorders*. 2002; 68:221–233. [PubMed: 12063150]
- Rubio-Stipec M, Peters L, Andrews G. Test-retest reliability of the computerized CIDI (CIDI-Auto): Substance abuse modules. *Substance Abuse*. 1999; 20(4):263–272. [PubMed: 12511833]
- Ruscio AM, Brown TA, Chiu WT, Sareen J, Stein MB, Kessler RC. Social fears and social phobia in the USA: Results from the National Comorbidity Survey Replication. *Psychological Medicine*. 2008; 38:15–28. [PubMed: 17976249]
- Singelis TM. The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin*. 1994; 20(5):580–591.
- Steiger JH. Tests for comparing elements of a correlation matrix. *Psychological Bulletin*. 1980; 87:245–251.
- Stein DJ. Social anxiety disorder in the West and in the East. *Annals of Clinical Psychiatry*. 2009; 21(2):109–117. [PubMed: 19439161]
- Suzuki K, Takei N, Kawai M, Minabe Y, Mori N. Is Taijin Kyofusho a culture-bound syndrome? *American Journal of Psychiatry*. 2003; 160(7):1358.
- Tempier R, Meadows GN, Vasiliadis H, Mosier KE, Lesage A, Stiller A, ... Lepnurm M. Mental disorders and mental health care in Canada and Australia: Comparative epidemiological findings. *Social Psychiatry and Psychiatric Epidemiology*. 2009; 44(1):63–72. [PubMed: 18626555]
- Wang PS, Lane M, Olfson M, Pincus HA, Wells KB, Kessler RC. Twelve-month use of mental health services in the United States: Results from the National Comorbidity Survey Replication. *Archives of General Psychiatry*. 2005; 62(6):629–640. [PubMed: 15939840]
- WHO World Mental Health Survey Consortium. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *JAMA: Journal of the American Medical Association*. 2004; 291(21):2581–2590. [PubMed: 15173149]
- Wittchen H. Reliability and validity studies of the WHO-Composite International Diagnostic Interview (CIDI): A critical review. *Journal of Psychiatric Research*. 1994; 28(1):57–84. [PubMed: 8064641]
- Zhong J, Wang A, Qian M, Zhang L, Gao J, Yang J, ... Chen P. Shame, personality, and social anxiety symptoms in Chinese and American nonclinical samples: A cross-cultural study. *Depression and Anxiety*. 2008; 25(5):449–460. [PubMed: 17823960]

Figure 1.
Factor loadings for confirmatory factor analysis.

Table 1

Factor loadings for exploratory factor analysis.

Item	Performance/speaking fears	Social interaction fears	Observational fears
Talking in meeting/class	.67 *	.09	-.09
Performing in front of an audience	.66 *	-.13	-.01
Meeting new people	-.01	.81 *	-.11
Parties/social gatherings	-.03	.69 *	-.15
Dating situation	.01	.35 *	.27
Talking to unfamiliar people	-.03	.56 *	.08
Using public bathroom	-.11	-.09	.61 *
Taking impromptu exam	.20	-.07	.39 *
Write/eat/drink in front of others	-.06	.05	.57 *
Working while being observed	.00	-.08	.64 *

Note.

*
 $p < .05$.