A Multi-Ethnic Examination of Socio-evaluative Fears

Peter J. Norton, Ph.D. and Justin W. Weeks, Ph.D.
Peter J. Norton, University of Houston;
Contributor Information.
Correspondence concerning this article should be addressed to Peter J. Norton, Ph.D., Department of Psychology, 126 Heyne Bldg., University of Houston, Houston, TX 77204-5022, Email: pnorton@uh.edu
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Abstract

Established and emerging cognitive models of social anxiety have provided researchers and clinicians with a solid foundation for understanding and treating this phenomenon. Much of the support for these models, however, has been derived from predominantly Caucasian samples. While the evidence supports the concept of socio-evaluative fears as being universal, ethnic/cultural influences can dramatically alter the cognitive profile of the fears. The purpose of this study was to examine the cross-ethnic equivalence of the bivalent fear of evaluation model of social anxiety among an ethnically diverse sample of 799 undergraduate students from the United States. A series of confirmatory factor analyses indicated good model fit for each of the ethnic groups examined, and that holding factor loadings and latent variances and covariances equivalent did not alter model fit significantly.

Keywords: Social phobia, Social anxiety, Measurement equivalence, Race/Ethnicity, Fear of evaluation

Method, Results, Discussion and References

Fear of negative evaluation has been proposed as a core feature of social anxiety (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997), and extensive empirical support has been obtained in defense of this notion (Coles, Turk, Heimberg, & Fresco, 2001; Hackmann, Surawy, & Clark, 1998; Horley, Williams, Gonsalvez, & Gordon, 2004; Mansell & Clark, 1999). Moreover, Weeks and colleagues (Weeks, Heimberg, & Rodebaugh, 2008a; Weeks, Heimberg, Rodebaugh, & Norton, 2008b; Weeks, Jakatdar, & Heimberg, in press; Weeks, Norton, & Heimberg, 2009) have presented findings suggesting that fear of evaluation *in general* is important in social anxiety, including fears of both positive and negative evaluation. Support for this *bivalent fear of*

evaluation model of social anxiety has been obtained across several undergraduate samples to date (Weeks et al., 2008a; 2008b; 2009; in press).

To illustrate, fear of positive evaluation (FPE) correlates strongly and positively with fear of negative evaluation (FNE), with both of these constructs found to correlate strongly with social anxiety (Weeks et al., 2008a; 2008b; in press). However, despite the strong positive relationships reported between FPE and FNE, these constructs are evidenced to be distinct. Confirmatory factor analyses (CFA) of the combined straightforwardly worded items from self-report measures of FPE and FNE in two independent undergraduate samples revealed that a two-factor fear of evaluation (i.e., FPE and FNE) model fit the data well and was superior to a single-factor fear of evaluation model (Weeks et al., 2008a; in press). Moreover, FPE accounted for unique variance of social interaction anxiety and fear of public scrutiny above and beyond that accounted for by FNE (Weeks et al., 2008a; 2008b).

Fears of positive and negative evaluation have also been found to hold specific relationships with social anxiety, as opposed to general relationships with anxiety/negative affect overall. FNE relates more strongly to social anxiety than to worry or anxiety sensitivity, and demonstrates incremental validity with respect to depression (i.e., FNE relates significantly to social anxiety upon controlling for depression, whereas FNE does not relate significantly to depression upon controlling for social anxiety) in a large clinical sample of social anxiety disorder patients (Weeks et al., 2005). FPE was found to demonstrate an identical pattern of relationships across several undergraduate samples (Weeks et al., 2008a; 2008b). Indeed, FPE has been found to relate more strongly to symptoms of social anxiety disorder (e.g., social interaction anxiety, public scrutiny fear) than to symptoms of several other anxiety disorders (i.e., generalized anxiety disorder, obsessive-compulsive disorder, panic disorder) or with anxiety and stress overall (Weeks et al., 2008a; 2008b).

In addition, recent findings support both FPE and FNE as having a dimensional latent structure (Weeks et al., 2009), suggesting that these cognitive features of social anxiety are best conceptualized as reflecting quantitative rather than categorical differences among individuals. Specifically, taxometric analyses conducted in a large unselected undergraduate sample yielded

curves that supported a dimensional latent structure. The taxometric findings of Weeks and colleagues are consistent with previous findings that social anxiety disorder has a dimensional latent structure (Kollman, Brown, Liverant, & Hofmann, 2006), in that the latent substructure of social anxiety disorder with respect to two distinct cognitive features was found to be uniformly dimensional. Thus, rather than suggesting that socially anxious individuals fall within subtypes of fearing either negative and/or positive evaluation(s), the findings of Weeks and colleagues (2009) indicate that FNE and FPE are components of social anxiety which vary continuously across individuals, and could therefore conceivably reflect generally synchronous, albeit distinct, features of social anxiety

Although findings to date provide encouraging support for the position that FNE and FPE are important cognitive features of social anxiety, the majority of the research providing this support has utilized predominantly Caucasian samples from the United States (Weeks et al., 2008a; 2008b; in press; 2009). While this does not nullify the validity of the bivalent fear of evaluation model of social anxiety among non-Caucasians, Malgady (1996) has noted that incorrectly assuming equivalence of tests across groups until proven otherwise may have greater negative implications (e.g., incorrect assessment interpretation, misdiagnosis) than assuming differences until proven similar. Moreover, Good and Kleinman (1985) caution that signs and symptoms associated with mental illness are not necessarily universal, as different racial, ethnic, and cultural groups may differentially attend to, emphasize, or report vastly different symptoms under similar circumstances. Indeed, within the United States, cross-racial, -ethnic, and even -tribal differences have been observed on measures of other anxiety syndromes (Norton, DeCoteau, Hope, & Anderson, 2004; Washington, Norton, & Temple, 2008; Zvolensky, McNeil, Porter, & Stewart, 2001). Good and Kleinman (1985) further illustrate that individuals of different backgrounds may differentially attend to, and therefore report, different physical symptoms of anxiety based on those attributions (i.e., heart attack, sexual potency, etc.) that are most feared among that specific group.

Therefore, in assessing cross-group variations on psychosocial constructs, it is critical to not simply examine mean differences on measures or compare relationships across symptom-based assessments, as the items on such measures may have vastly different meanings to individuals of

different backgrounds. In other words, responses to these indicator items may relate *differentially, and systematically,* to the larger construct of interest across groups. Indeed, the very nature of a construct may vary qualitatively across ethnic groups. Nonetheless, most measures are created and normed based on the majority ethnic population, and some researchers may fail to formally assess whether measures will hold across different ethnic groups before using them in ethnic minority populations (Knight & Hill, 1998).

As Knight and Hill (1989) describe, group differences in mean scores on measures may indeed be due to differences in the construct between groups; however, they may alternatively be due to a lack of *measurement equivalence.* Group differences in scores on measures could merely reflect measurement invalidity with respect to *item non-equivalence* (i.e., the meaning of an item varies across racial or ethnic groups), *functional equivalence* (i.e., differences across racial or ethnic groups in the ability of a measure to predict, correlate, or be otherwise related to other items/constructs), or *scalar equivalence* (i.e., differences across racial or ethnic groups in the extent to which a score on a particular measure loads on a particular construct; Hui & Traindis, 1985). It is noteworthy that no study to date has examined potential ethnic/racial differences in the cognitive features of social anxiety/fear of evaluation through the evaluation of structural invariance across various ethnic/racial groups. Hence, the purpose of the current study was to examine the cross-racial/ethnic stability of the bivalent fear of evaluation model of social anxiety (Weeks et al., 2008a, 2008b, in press) using a diverse sample of students representing the four predominant racial/ethnic groups in the United States.

Method

Participants

Undergraduate students (*n* = 880) from the University of Houston consented to participate in a large questionnaire-based study. Participants completed questionnaires online through a Psychology Department data collection system. Of the 880 participants, 799 self-identified themselves as being of either African American (*n* = 141, 17.6%), Asian (*n* = 251, 31.5%), Caucasian (*n* = 247, 30.9%), or Hispanic/Latino(a) descent (*n* = 160, 20.0%), and were retained for the purposes of this study. Given that people of Hispanic/Latino(a) descent are considered an *ethnic* group comprised of numerous *racial* backgrounds, we have opted to use the term

racial/ethnic groups when describing our results. Participants of Native American, multiracial, or "other" ethnic or racial backgrounds were insufficiently represented in this sample for the planned analyses. All participants were proficient in English at a Test of English as a Foreign Language (TOEFL) level or higher. Most of the participants were women (*n* = 644, 80.6%), 150 (18.8%) were men, and 5 (0.6%) did not report their sex. Mean age of the participants was 20.16 years (*sd* = 3.82)[1].

Measures

As part of a larger study, participants completed a short battery of questionnaires, including the Brief Fear of Negative Evaluation scale and the Fear of Positive Evaluation Scale.

Brief Fear of Negative Evaluation-Straightforward scale (BFNE-S: Rodebaugh et al., 2004; Weeks et al., 2005)

The Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983) is a 12-item self-report measure of fear and distress related to negative evaluation from others. Items are rated on a 5-point Likert-type scale, ranging from 1 (*Not at all characteristic of me*) to 5 (*Extremely characteristic of me*). Rodebaugh and colleagues (2004) and Weeks and colleagues (2005) have reported that the 8 straightforwardly-worded items of the BFNE are more reliable and valid indicators of fear of negative evaluation than the reverse-scored items in both undergraduate and clinical samples. Consequently, Rodebaugh et al. and Weeks et al. have suggested the scoring strategy of utilizing only the straightforward (-S) BFNE items to calculate the total score, thereby yielding an 8-item BFNE-S score. The BFNE-S has demonstrated excellent internal consistency (all α's >.92), strong factorial validity, and strong construct validity in undergraduate (Rodebaugh et al., 2004) and clinical (Weeks et al., 2005) samples. The 12-item BFNE was administered; however, only the straightforward items (BFNE-S) were utilized in the present analyses. The BFNE-S demonstrated excellent internal consistency in this sample (α = .93). For each racial group, scores on the BFNE-S ranged from the scale minimum (8) to the maximum (40).

Fear of Positive Evaluation Scale (FPES; Weeks et al., 2008a)

The 10-item FPES uses a 10-point Likert-type rating scale, ranging from 0 (not at all true) to 9 (very true). Two reverse-scored items are included but are not utilized in calculating the total score. The FPES has demonstrated strong internal consistency (all αs >.80) and 5-week test-retest reliability (intraclass correlation coefficient =.70) in undergraduate samples. Furthermore, the FPES has demonstrated strong factorial and construct validity in several undergraduate samples (Weeks et al., 2008a; 2008b; in press). The FPES demonstrated acceptable internal consistency in the current sample (α=.83). For each racial group, scores on the FPES ranged from the scale minimum (0) to nearly the scale maximum (72) (see Table 1).

Table 1

Descriptive summaries of latent indicators by racial/ethnic group.

	African-American	Asian	Caucasian	Hispanic/Latino(a)
Age	19.58[a] (2.27)	19.25[a] (2.07)	21.74[b] (5.96)	19.98[a] (2.52)
BFNE	19.74[a] (7.32)	22.05[b] (7.59)	22.23[b] (7.83)	19.85[a] (7.29)
	8 – 40	8 – 40	8 – 40	8 – 40
FPES	25.39 (13.63)	28.42 (13.79)	26.62 (14.58)	26.22 (13.54)
	0 – 67	0 – 70	0 – 63	0 – 57
# (%) Female	126[a] (90.6%)	188[b] (75.5%)	189[b] (76.8%)	141[a] (88.1%)

Note: Within each row, means with different superscripts are significantly different ($p < .05$).

Table 1 Descriptive summaries of latent indicators by racial/ethnic group.

Procedure

Participants were invited to participate in an online data collection project via announcements

made during undergraduate classes at the University of Houston. Data collection was managed using the Sona-Systems software package (www.sona-systems.com), and was restricted to University of Houston undergraduate students currently enrolled in a psychology course. Carlbring et al. (2007) have presented that anxiety measures completed online or on paper show similar psychometric properties and are very highly correlated. All participants received partial academic credit for their participation.

Given that the items of the BFNE-S are considered ordinal (i.e., they hold only five response options with an unknown distance between scale points), the data were analyzed with MPlus (version 4.1; Muthén & Muthén, 2006) using a Weighted Least Squares with Missing Values (WLSMV) estimator. Thus, BFNE-S items were treated as ordinal/nominal, whereas FPES items (which utilize a 10-point response scale) were treated as continuous. Following Byrne's (1998) recommended procedures for testing structural invariance, cross-group analyses were conducted in a three-step fashion. First, the structural model was evaluated for each racial group freely to determine absolute fit. Second, if the data showed reasonable and comparable fit for each group, the structural model would be fit to the data using multi-group analysis constraining factor loadings to be equal across groups. Finally, if the second step resulted in acceptable model fit, the model would be reanalyzed holding the factor loadings and the latent variances and covariances equal across groups.

In testing for structural equivalence across the four racial/ethnic groups, we utilized the best-fitting fear of evaluation structural model obtained by Weeks et al. (2008a). In this model, FPES items loaded onto a single latent factor (i.e., *Fear of Positive Evaluation*), while the BFNE-S items loaded onto a separate, correlated latent factor (i.e., *Fear of Negative Evaluation*). The two latent factors were allowed to freely covary (see Figure 1). Model fit was evaluated in the present analyses using the: (a) Tucker-Lewis incremental fit index (TLI; Tucker & Lewis, 1973), (b) comparative fit index (CFI; Bentler, 1990), and (c) root mean square error of approximation (RMSEA; Steiger & Lind, 1980). Kenny (2008) recommends that values for the TLI and CFI of .90 to .95 are acceptable while values above .95 are good. Further, regarding the RMSEA, Kenny indicates that good models have values of .05 or lower, while bad models have RMSEA values of .10 or higher.
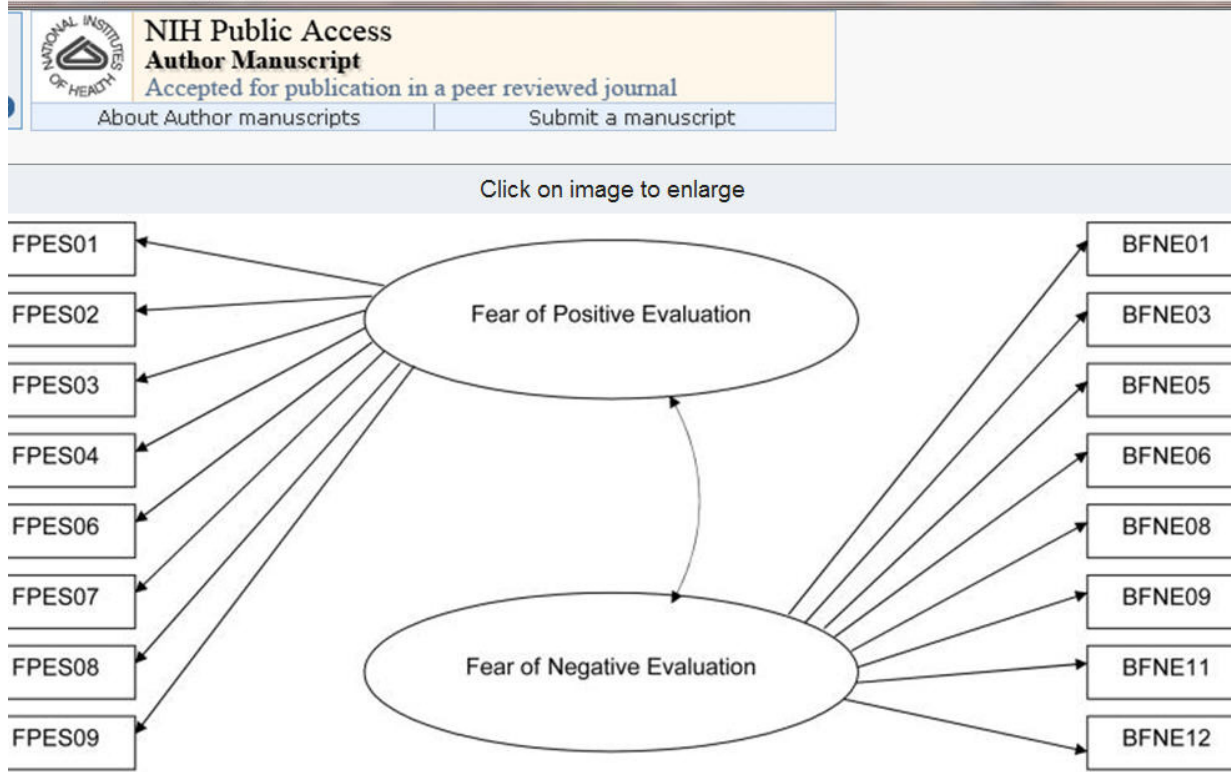
FIGURE 1
Hypothesized 2-factor fear of evaluation model.

Scale Summaries

Table 1 presents descriptive summaries of the key demographic and indicator variables for each racial/ethnic group. A one-way analysis of variance (ANOVA) suggested that the Caucasian sample was significantly older than all other groups, $F (3, 397) = 10.39$, $p <.001$. However, in each of the racial groups, age was unrelated to either FPES, r's $=.06$ to $-.13$, n's $= 62$ to 142, p's $<.16$, or BFNE-S, r's $= -.05$ to $.15$, n's $= 62$ to 142, p's $<.16$. Multivariate ANOVA of the BFNE-S and FPES summated scales suggested that the groups differed from each other on some variables, $F (6, 1542) = 3.55$, $p =.002$, Pillai $=.027$; univariate follow-up analyses suggested that the multivariate difference was driven by the BFNE total score, wherein participants of Asian and Caucasian descent scored significantly higher than did participants of African American or Hispanic/Latino(a) descent.

Multi-Group Structural Modeling

To test model equivalence across the four racial/ethnic groups, a series of multi-group CFAs was

conducted to examine structural invariance across groups. The first multi-group model estimated all factor loadings and covariances freely across groups to establish a base model. Results indicated that this unconstrained model showed acceptable fit to the data, WLSMV χ^2 (169) = 387.66; RMSEA =.08; CFI =.94; TLI =.99. Subsequent models were sequentially evaluated for change in fit utilizing a chi-squared difference test.

The second model, holding all factor loadings and residual variances invariant across groups, showed good fit, WLSMV χ^2 (112) = 220.85; RMSEA =.07; CFI =.97; TLI =.99. Specifying the factor loadings and residual variances to be invariant in the second model resulted in no significant difference in model fit, $\chi^2 \Delta$ (26) = 36.18, p =.088[2].

Finally, all parameters in the third model were constrained to be equal across groups. The results showed good model fit, WLSMV χ^2 (66) = 113.58; RMSEA =.06; CFI =.99; TLI =.99, with no significant difference in fit from either the freely estimated baseline model, $\chi^2 \Delta$ (18) = 18.79, p =.405, or the second factor loading-invariant model, $\chi^2 \Delta$ (3) = 1.06, p =.786 (see Table 2).

Table 2

Factor loadings, covariances, and latent means from fully equivalent model.

	Unstandardized Estimate	Fully Standardized Estimate By Racial/Ethnic Group			
		African American	Asian	Caucasian	Hispanic/Latino(a)
FPE by					
•FPES 01	1.000	0.635	0.623	0.685	0.587
•FPES 02	1.125	0.645	0.664	0.743	0.605
•FPES 03	0.661	0.351	0.393	0.467	0.356
•FPES 04	0.920	0.635	0.629	0.724	0.629
•FPES 06	1.051	0.620	0.605	0.631	0.589
•FPES 07	0.987	0.627	0.618	0.655	0.639
•FPES 08	0.966	0.618	0.635	0.629	0.605
•FPES 09	1.018	0.609	0.643	0.664	0.609
FNE by					
•BFNE 01	1.000	0.763	0.787	0.864	0.821
•BFNE 03	1.112	0.849	0.800	0.807	0.784
•BFNE 05	1.150	0.878	0.838	0.919	0.857
•BFNE 06	1.121	0.856	0.862	0.888	0.818
•BFNE 08	1.078	0.823	0.866	0.805	0.767
•BFNE 09	0.855	0.653	0.831	0.822	0.820
•BFNE 11	0.999	0.762	0.856	0.827	0.799
•BFNE 12	1.102	0.841	0.790	0.785	0.844
•FNE with FPE	0.682	0.582	0.561	0.548	0.629
Latent Means					
•FPE		0.000	0.388	0.188	0.119
•FNE		0.000[a]	0.246[b]	0.280[b]	0.028[a]

Note: For each latent mean, values with different superscripts are significantly different (p <.05).

Table 2 Factor loadings, covariances, and latent means from fully equivalent model.

Given that support was obtained for measurement equivalence across responses to the BFNE-S

and the FPES, the latent factor scores obtained for FNE and FPE were examined for mean differences. Multivariate ANOVA of the FNE and FPE factor scores suggested group differences, $F(6, 1542) = 4.74$, $p < .001$, Pillai $= .036$. As with the previous analyses using scale scores, univariate follow-up analyses suggested that the difference was driven by the FNE factor, wherein participants of Asian and Caucasian descent evidenced significantly higher FNE than did participants of African American or Hispanic/Latino(a) descent.

Discussion

Models of the underlying phenomenology of social anxiety have undergone considerable refinement (Rapee & Heimberg, 1997; Weeks et al., 2008a) since early behavioral and cognitive writings on heterosocial anxiety and social phobia (Liebowitz, Gorman, Fyer, & Klein, 1985; Marks & Gelder, 1966). Despite these developments, however, the implicit assumption of the universality of such models of socioevaluative fears across different ethnic groups had not yet been thoroughly examined. Ethnic and cultural variations in how one appraises a social situation, one's perceived role in the encounter, and the consequences of one's actions in the situation, as well as differences in culturally-prescribed social behaviors (Norton, Washington, Peters, & Hayes, in press) raise the possibility that socioevaluative concerns, despite evidence of universality across groups (Good & Kleinman, 1985), may have fundamental differences in their underlying characteristics. Accordingly, the purpose of the current study was to evaluate possible ethnic variations in the underlying components of the bivalent fear of evaluation model (Weeks et al., 2008a) across the four most prevalent racial/ethnic groups in the United States.

Specifically, we sought to explore the cross-ethnic equivalence of an emerging model of socioevaluative anxiety. Structural modeling of large samples of undergraduate students self-identified as either African American, Asian, Caucasian, or Hispanic/Latino(a) suggested that the measurement of the bivalent fear of evaluation model held equivalent across these populations. First, when the parameters for each group were freely estimated, the model showed adequate fit to the data, suggesting that concerns over both positive and negative evaluative processes are characteristic components of socioevaluative fears. In the second step, the model was constrained to hold the loadings of the indicators of negative and positive evaluation fears equivalent.

Analyses continued to indicate good fit to the data, and there was no significant degradation in model fit from the freely estimated model. Finally, a third model was fitted holding the covariances between the constructs of positive and negative evaluation fears equivalent across ethnic groups. Again, no significant decrease in model fit was observed; indeed, all fit indices indicated good model fit. Given the evidence of measurement invariance for responses to the BFNE-S and the FPES, mean latent factor scores for FNE and FPE were compared across racial/ethnic groups. Similar to when comparing summated scale scores, participants of Caucasian and Asian descent evidenced higher FNE than did participants of African American and Hispanic/Latino(a) descent. No differences emerged when examining FPE (based either on scores obtained on the FPES, or on latent factor scores).

Results of this study provide preliminary evidence that the underlying *nature* of socioevaluative fears is largely consistent across individuals of African American, Asian, Caucasian, and Hispanic/Latino(a) descent, or, at least, across college-level students of these racial and ethnic backgrounds in the United States; although there is evidence that individuals of different racial/ethnic backgrounds in the US may, on average, experience varying *levels* of fear of negative evaluation. Still, several limitations must be borne in mind when considering these results. First, selecting undergraduate students may have increased the homogeneity of the sample, and the participants in the present study may not be representative of the general population. Consequently, replication of the current findings using community or national samples is warranted. Second, although attempts were made to increase the representation of both sexes in the current study, the sample as a whole was predominantly female. Indeed, in some ethnic groups, males were significantly underrepresented. As such, future research should attempt to increase the representation of men across groups to ensure that the cross-ethnic similarity observed here also extends across sexes. Next, based on demographics of the University of Houston student body, it could be expected that each racial group was comprised of participants who range from being recent immigrants or exchange students through to those who are highly-acculturated, multigenerational Americans. Thus, the clustering of participants into broad racial/ethnic categories may have masked important cultural subgroups within each grouping. However, no measure of ethnic identity or acculturation was administered in this study; thus, the effect of these variations could not be modeled. Furthermore, attempting to

structurally model all cultural or sub-cultural groups [e.g., Cuban, Cuban-American, Mexican, Mexican American, Haitian, etc., rather than Hispanic/Latino(a)] would require a sample size of Brobdingnagian proportions. Finally, all participants in this study were recruited from a single campus. Consequently, regional influences may have inflated the apparent homogeneity in our results. However, it is interesting to note that the model shown to be equivalent across racial/ethnic groups in the present study was originally derived, tested, and successfully cross-validated in northeastern US college samples (Weeks et al., 2008a; in press). Limitations aside, the current study offers compelling, albeit preliminary, evidence to support the notion that models of socioevaluative fears appear to be highly similar despite differences in one's ethnic or racial background.

Footnotes

[1]Due to a computing error, age was only recorded for 401 participants.

[2]Because a WLSMV estimator was used, the WLSMV χ^2 value and df cannot be used to compute difference tests. Thus, chi-square difference tests were computed using the methods provided by Muthén & Muthén (2006).

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Contributor Information:

Peter J. Norton, University of Houston;

Justin W. Weeks, Ohio University;

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