

Fear factors: Cross validation of specific phobia domains in a community-based sample of African American adults

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ABSTRACT

The current study attempted a cross-validation of specific phobia domains in a community-based sample of African American adults based on a previous model of phobia domains in a college student sample of African Americans. Subjects were 100 African American community-dwelling adults who completed the Fear Survey Schedule-Second Edition (FSS-II). Domains of fear were created using a similar procedure as the original, college sample of African American adults. A model including all of the phobia domains from the FSS-II was initially tested and resulted in poor model fit. Cross-validation was subsequently attempted through examining the original factor pattern of specific phobia domains from the college sample (Chapman, Kertz, Zurlage, & Woodruff-Borden, 2008). Data from the current, community based sample of African American adults provided poor fit to this model. The trimmed model for the current sample included the animal and social anxiety factors as in the original model. The natural environment-type specific phobia factor did not provide adequate fit for the community-based sample of African Americans. Results indicated that although different factor loading patterns of fear may exist among community-based African Americans as compared to African American college students, both animal and social fears are nearly identical in both groups, indicating a possible cultural homogeneity for phobias in African Americans. Potential explanations of these findings and future directions are discussed.

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Specific phobias continue to represent a paradox in the empirical literature, being estimated as the most pervasive of all psychological disorders in community-based samples with a 1-year prevalence rate of 8.7% (Kessler, Belfund, Demler, Jin, & Walters, 2005) yet being ancillary to more debilitating anxiety disorders (Chapman, Kertz, Zurlage, & Woodruff-Borden, 2008). Despite continued advancement in the study of anxiety and related constructs, the relationship between specific fear domains (e.g., fear factors) and anxiety continues to raise questions about the distinct nature of the construct of fear (Craske et al., 2009). Similarly, the existing literature pertaining to anxiety and related constructs in ethnic minority samples continues to be sparse although there is burgeoning evidence that African Americans in particular may endorse more fears and have higher rates of specific phobias than their non-Hispanic White counterparts (Chapman et al., 2008; Last & Perrin, 1993; Nalven, 1970; Neal & Brown, 1994; Neal & Turner, 1991; Neal, Lilly, & Zakis, 1993). The aforementioned studies particularly suggests more animal fears (e.g., fear of dogs) in African Americans than their non-Hispanic White counterparts although

no such differences have been noted pertaining to the other fear domains. Nascent work in this area (see Chapman et al., 2008) has utilized college samples to compare African Americans and their non-Hispanic White counterparts on domains of fear, with results further suggesting that African Americans may endorse more fears than non-Hispanic White adults. Although these findings represent advancements in the area of anxiety and related disorders in ethnic minority samples, similar work in community-based samples of ethnic minorities would significantly enhance our understanding of the various domains of fear in under-served populations. The current study represents a significant stride in this area through an attempt to cross validate the one confirmatory factor analysis to date of specific phobia domains in a community-based sample of African American adults.

1. Fear factors: specific phobia domains in African American adults

While anxiety disorders in general are not fully understood in terms of their presentation and prevalence in African American samples (see Heurtin-Roberts, Snowden, & Miller, 1997; Smith, Friedman, & Nevid, 1999), specific phobias represent a facet of anxiety that previous studies have indicated may occur more frequently in African Americans than in their non-Hispanic White counterparts (Chapman et al., 2008; Last & Perrin, 1993; Nalven, 1970;

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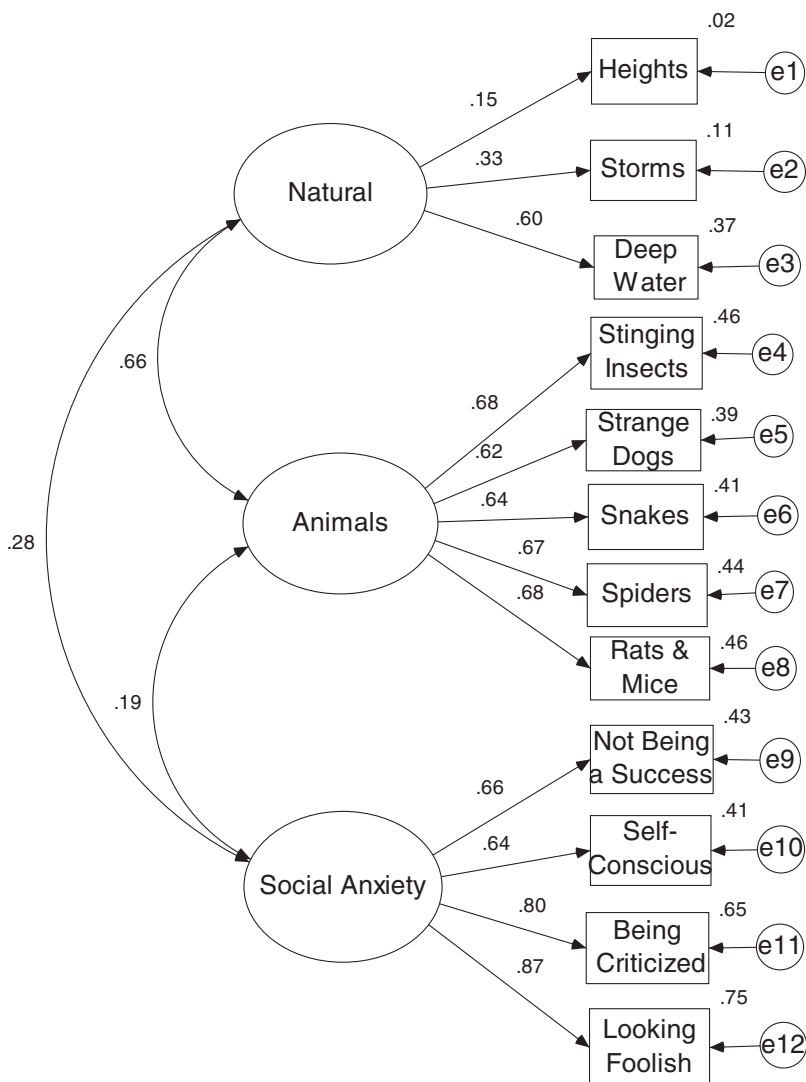


Fig. 1. Specific phobia domains for African American college student sample in *y*.

Neal & Turner, 1991). Additionally, a previous study by Chapman et al. (2008) in which they conducted a confirmatory factor analysis of specific phobia domains based on the items from the Fear Survey Schedule-II (FSS-II) suggests that the fear domains endorsed by African Americans differ from those typically endorsed by non-Hispanic Whites. Of the fear domains associated with a diagnosis of specific phobia, which include animal type, natural environment type, blood–injection–injury type, situation type, and other type (American Psychiatric Association, 1994), African Americans were found to endorse fears falling within the domains of Natural Environment Type and Animal Type, as well as fears related to social anxiety (see Fig. 1). In regards to Natural Environment Type fears, African Americans endorsed more fears of heights, storms, and deep water than the non-Hispanic White sample. Additionally, while both samples reported Animal Type fears, the African American sample was more likely to endorse fears of strange dogs, stinging insects, and rodents than the White sample. Lastly, the African American sample differed significantly from the non-Hispanic White sample in the social fear domain, particularly the fear of not being a success.

While these findings from the Chapman et al. (2008) study are intriguing in terms of the fear domain specificity apparent between samples of African American and non-Hispanic White college students, subsequent research efforts are needed to deter-

mine if these differences in factor loadings would subsist as a homogenous pattern of commonly endorsed fears within community dwelling African Americans. The current study addresses this question by attempting to cross-validate the original model of fear domains for African American college students with specific fears endorsed in community dwelling African American adults. To date, this appears to be the first attempt to cross-validate factor loadings of specific phobia domains in a community based ethnic minority sample.

Based on the aforementioned literature, a confirmatory factor analysis (cross-validation) of the Chapman et al. (2008) study was attempted. It was hypothesized that a similar pattern of fears would emerge within the community sample as in the original phobia groupings of the college sample; specifically, it was hypothesized that the factor loadings for the animal (e.g., fear of strange dogs, stinging insects, and rodents), natural environment (e.g., fear of heights, thunderstorms, and deep water) and social fears (e.g., e.g., not being a success) would be similar in the current sample as in the original sample which is further underscored in previous work (Brown & Eaton, 1986; Chapman et al., 2008; Last & Perrin, 1993; Neal & Turner, 1991). Due to the relative scarcity of literature related to specific phobias in ethnic minority samples (e.g., limited work on BII fears), no additional a priori predictions were made.

Table 1
Demographics.

Variable	
Gender	
Male	9
Female	91
Age	
M	37
SD	7.37
Marital status	
Single without partner	34
Single with partner	21
Married	24
Divorced and remarried	4
Divorced and single	14
Separated	3
Education	
Grades 9, 10, or 11	6
High school graduate	12
Some college or specialized training	47
College graduate	23
Graduate or professional training	12
Income level	
Under \$10K	27
\$10,000–19,999	16
\$20,000–29,999	19
\$30,000–39,999	1
\$40,000–49,999	19
\$50,000–59,999	5
\$60,000–69,999	5
\$70,000–79,999	1
\$80,000–89,999	2
\$90,000+	5

2. Method

2.1. Participants

Participants were 100 community dwelling African American adults (91% female). Participants ranged in age from 25 to 55 with a mean age of 37. Participants were recruited from the community through flyers, presentations at local community centers, and through word of mouth. All participants completed the Fear Survey Schedule-Second Edition (FSS-II; Geer, 1965) as part of a larger study investigating anxiety and related disorders in community-dwelling African American parent-child dyads. Participants received financial compensation (\$50 in cash) for their time. Table 1 presents demographics for the sample.

2.2. Model indicators for phobia domains

A similar methodology as Chapman et al. (2008), was utilized in which model indicators were created from items on the Fear Survey Schedule Second Edition (FSS-II) for the subsequent confirmatory factor analysis. Specifically, the categories for the items on the FSS-II were categorized based on the subtypes established in the DSM-IV (American Psychiatric Association, 1994). The social anxiety factor was created with a similar rationale based upon the DSM-IV (American Psychiatric Association, 1994). As in the previous study, the inter-rater reliability of the factors from the DSM-IV resulted in excellent agreement ($K=1.00$) for all of the utilized factors (e.g., animal, blood-injection-injury, natural environment, situational, other, and social). Latent factors (e.g., fear factors) were the phobia domains, which served as psychological constructs conceptually related to the model indicators (Chapman et al., 2008). Although both the Chapman et al. (2008) and the current investigation derived these model indicators from a rational basis similar to the DSM-IV, these indicators were empirically investigated as detailed below (Watson, 2005).

Table 2
Sample items from the Fear Survey Schedule Second Edition (FSS-II; Geer, 1965).

"Please rate how much fear you feel using the following rating scale and record your answer in the space provided."		
Item number	Question	Domain
1	Sharp objects	Other
35	Spiders	Animals
37	Not being a success	Social
23	Heights	Natural-environment
7	Being a passenger in an airplane	Situational
12	Hypodermic needles	blood-injection-injury

Note: 0 = none, 1 = very little fear, 2 = a little fear, 3 = some fear, 4 = much fear, 5 = very much fear, 6 = terror.

2.3. The Fear Survey Schedule-Second Edition (Geer, 1965)

The FSS-II is a 51-item instrument with high internal reliability ($r = .94$; Geer, 1965), and is recommended for assessing specific phobias within a research setting, supporting its rationale for use in the current study. Participants are asked to rate the amount of fear they associate with varied stimuli and situations on a scale from 1 to 7. The FSS-II's and FSS-III's validity has been examined through several factor analytic studies; (see Arrindell, 1980; Arrindell, Pickersgill, Merckelbach, Ardon, & Cornet, 1991; Klieger & Franklin, 1993) with mixed results; these studies have indicated the major factors contained within the measure include water, death, illness, injury, objects, organisms, violence, social interaction, and negative social evaluation (Bernstein & Allen, 1969; Rubin, Katkin, & Weiss, 1968). Additionally, the FSS-II has been correlated with multiple other anxiety measures (Geer, 1965). Sample items are presented in Table 2.

2.4. Procedure

An analysis of moment structure program (AMOS; Arbuckle, 2010) was utilized to estimate the sample covariance matrix for which a maximum-likelihood solution was employed (see Chapman et al., 2008). The chi-square goodness-of-fit test was utilized as in the original study to determine global fit. Similarly, the additional global fit indices used in the original study (e.g., comparative fit index, CFI; Bentler, 1990; incremental fit index, IFI; Bollen, 1989; root mean square of approximation, RMSEA) were used. Global fit indices close to 1.0 are generally agreed upon as acceptable values (Hoyle & Smith, 1994; Hu & Bentler, 1999) with RMSEA cutoff values near .06 (Hu & Bentler, 1999). The six factors yielded from the FSS-II were initially examined to determine whether a model containing all six phobia domains adequately fit the data. Additionally, cross validation was further examined by testing a similar model as the college-based sample in the original study. A trimmed model was further tested to determine the best fitting model in the current sample.

3. Results

3.1. Frequencies of specific phobia domains among community-based and college-based sample of African American adults

Table 3 illustrates the means and standard deviations of fear domains in both the community sample of African American in the current sample and the original, college sample. As indicated in Table 3, the community sample of African American adults in the current sample appear to endorse less overall fears of each specific phobia domain as measured by the FSS-II.

Table 3
Frequency differences of fear factors among African American college students (Chapman et al., 2008) and Community-Dwelling African American adults.

Variable	College sample Chapman et al. (2008)	Community-sample Chapman et al. (current study)
Animal		
M	12.99	10.91
SD	8.03	8.12
+Blood-II		
M	2.38	1.59
SD	2.64	2.79
+Natural environment		
M	5.78	4.60
SD	3.66	4.08
+Situational		
M	13.31	10.12
SD	8.30	10.72
Social anxiety		
M	18.66	12.73
SD	10.42	13.53
+Other		
M	32.78	27.15
SD	14.98	23.21

Note: +Denotes domains that were excluded from final model.

3.2. Bivariate correlations

Bivariate correlations were conducted with the model indicators from the FSS-II to examine the association between variables. The correlations are presented in Table 4. As expected, the model indicators were significantly correlated. As such, the model indicators were utilized to create latent constructs for the subsequent structural equation model (e.g., phobia domains).

3.3. Examination of all phobia domains derived from the FSS-II

A confirmatory factor analysis was initially conducted using the six phobia domains (e.g., animal, blood–injection–injury, natural environment, other, situational, and social) that were derived from the items on the FSS-II as categorized by the DSM-IV (American Psychiatric Association, 1994). AMOS Version 19.0 (Arbuckle, 2010) was utilized to assess the parameters of the model. In order for the model to be identified, regression weights were set to 1 for all error terms for each endogenous variable. The global fit indices for the model indicated poor model fit with the observed data $\chi^2(34, N = 100) = 60.1, p = .004$; TLI = .911, CFI = .933, IFI = .935, RMSEA = .088. These results suggest that a model including all six phobia domains from the FSS-II do not adequately encompass the fears of the African American adults in the current sample. Given both the poor fit of the full model (e.g., animal, BII, natural-

environment, other, situational, and social fears) and the rationale of the current study (e.g., CFA of Chapman et al., 2008 model), the feasibility of testing additional trimmed models from the original six domains did not appear justified. Moreover, the factors from the poor fitting model (e.g., BII, natural environment, and situational fears) were omitted from subsequent analyses, with the exception of the domains contained in the subsequent cross validation.

3.4. Cross validation of phobia domains: Chapman et al. (2008) model

An additional confirmatory factor analysis was subsequently conducted using the model from the original Chapman et al. (2008) study following the aforementioned statistical procedure. AMOS Version 19.0 (Arbuckle, 2010) was utilized to assess the parameters of the model as well as to determine whether a similar model would emerge in the current, community-based sample of African Americans as compared to the college-based sample of African Americans in the Chapman et al. study. Regression weights were again set to 1 for all error terms for each endogenous variable. The original model yielded a solution that was non-admissible, $\chi^2(62, N = 100) = 129, p = .000$; TLI = .831, CFI = .865, IFI = .869, RMSEA = .105 indicating a different pattern of fears in the community-based sample of African Americans. As such, an additional, trimmed model was examined in the community-based sample.

3.5. Trimmed model for community-based sample

Since the data from the current sample did not provide adequate fit of the model obtained from the original, college-based sample of African Americans (e.g., the model containing the natural environment domain failed to fit the data), an additional model was then estimated for the current sample of community-dwelling African American adults. A similar procedure was followed as the two previously described. Additionally, modification indices indicated that model fit would improve if the error terms for stinging insects and worms, as well as the natural environment factor were correlated with other error terms; given the non-conceptual basis for correlating error terms and the apparent instability of these constructs in the posed model, these indicators along with the natural environment factor were omitted. The results are presented in Fig. 2. The global fit indices for the model indicated excellent fit with the observed data $\chi^2(19, N = 100) = 27.4, p = .095$; TLI = .959, CFI = .972, IFI = .973, RMSEA = .067. These results indicate that the trimmed model for the community-based sample of African Americans contains latent factors of animal and social anxiety domains.

Table 4
Bivariate correlations of specific phobia domains from the FSS-II.

Variables	1	2	3	4	5	6	7
1. Fear total (51 items)	–	.811**	.766**	.530**	.919**	.927**	.910**
2. Animal Domain (6)	–	–	.654**	.293**	.671**	.624**	.690**
3. +Natural Domain (3)	–	–	–	.303**	.645**	.633**	.646**
4. +BII Domain (2)	–	–	–	–	.441**	.493**	.487**
5. +Situational Domain (15)	–	–	–	–	–	.799**	.832**
6. Social Domain (11)	–	–	–	–	–	–	.890**
7. +Other Domain (14)	–	–	–	–	–	–	–

** $p < .01$.

Note: +Denotes domains that were excluded from final model. (N) Indicates number of indicators in each domain.

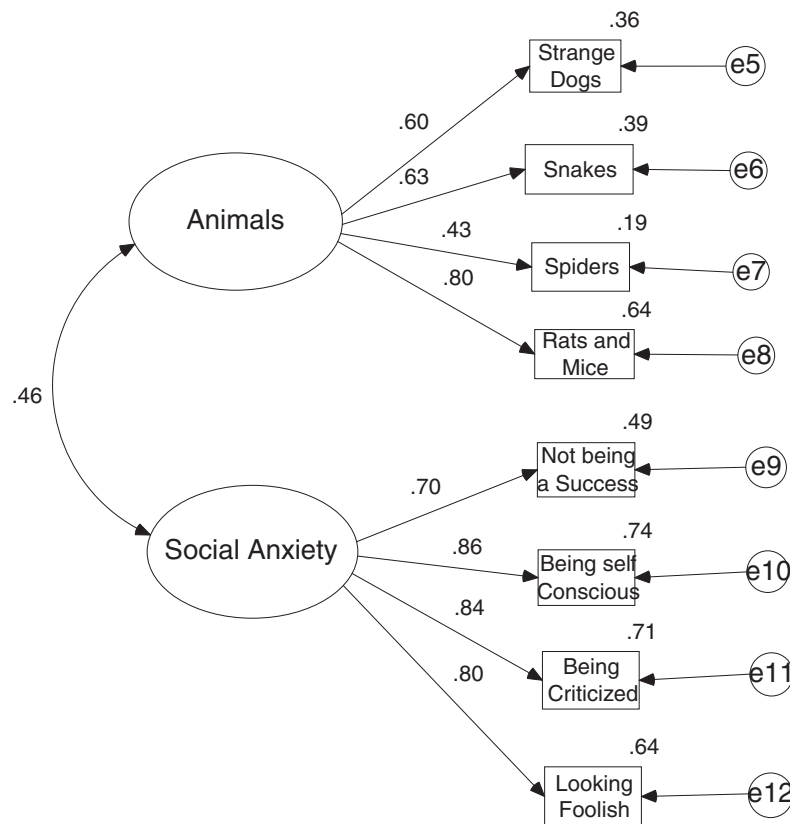


Fig. 2. Trimmed model of specific phobia Domains for African American Community based sample in current study.

4. Discussion

The current study represents one of the first cross-validations of specific phobia domains in an African American sample based on item responses from the FSS-II. The results indicated that the full model, which included all six phobia domains from the FSS-II, did not adequately fit the data. The cross validation of the original, Chapman et al. (2008) model was also not achieved, although significant similarities exist between the original investigation's fear domains endorsed by a sample of African American college students and the domains endorsed by the current investigation's sample of community dwelling African American adults. While the community sample did not endorse Natural Environment Type fears to the extent of the original college sample, the similarities within the Animal Type and Social Anxiety fear domains are striking. For example, within the Animal Type fear domain, the current community sample endorsed specific fear factors nearly identical to those of the college sample. Specifically, participants in the current study endorsed fears of strange dogs, snakes, spiders, and rats and mice, with the only significant difference from the college sample being the absence of an overall endorsement of a fear of stinging insects. It is suggested that these particular animal domain fear factors may occur as a result of fear conditioning within the environment of the participants, and may in fact include a generational transmission component as a factor in the etiology of the phobia. As Chapman et al. (2008) and others have previously suggested (Neal & Turner, 1991), African American adults who experienced overt racism in prior eras may have a generalized fear of symbols (e.g., dogs) related to racial hostility, and transmitted this fear to consequent generations of family members. Barlow's findings (2002) that phobic etiologies may result from either vicarious experience or misinformation in individuals with genetic predispositions for the disorder supports this assertion. Although racial identity and

acculturation were not assessed in the current sample, a theoretical explanation might apply to a specific phobia of dogs in the following manner: an African American experiences (either directly, through visual media, or directly witnessing) overt racial hostility in the form of attacks by police dogs during a Civil Rights march or gathering. This individual may subsequently be conditioned to fear dogs, and communicates this fear verbally and through observably avoidant behavior to his or her progeny. His or her vicarious fear-conditioning experience as well as misinformation concerning the safety of dogs could then trigger the development of a Specific Phobia, Animal Type in later generations of family members, through setting up a rather insidious psychological vulnerability (Barlow, 2002).

Additionally, the current community sample endorsed an identical pattern of fear factors within the construct of social anxiety as the college sample. The factors endorsed from both studies within the social anxiety domain included the fear of not being a success, being self-conscious, being criticized, and looking foolish. In the current sample, the fear factor of not being a success loaded prominently within the social anxiety construct, just as it did in the original study. An explanation for this finding may be linked to the well documented importance of kin support networks in African American culture (Boyd-Franklin, 2003; Caldwell & Koski, 1997; Hatchet & Jackson, 1992; McCabe, Clark, & Barnett, 1999; Murry, Bynum, Brody, Willert, & Stephens, 2001). African Americans may view personal success as reflective upon the larger identity of an extended kin network, similar to other collectivistic cultures (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988), and thus may fear any degradation of this network through their own personal failures. Although it is possible to fear not being a success exclusively from subjective views of social support, this explanation seems plausible based on the existing literature in this area. Steel and Aronson (1995) notion of stereotype threat may

offer an additional explanation in which many African Americans fear confirming negative stereotypes held by non Hispanic White individuals. Situations for which performance could be potentially scrutinized (e.g., giving a speech, occupation with many non Hispanic White individuals) may further intensify pre-existing anxiety thus creating a vicious cycle of situationally bound fear, anxiety about specific social situations, and the threat of confirming negative stereotypes by non Hispanic Whites.

Further worth noting are the models that were omitted due to poor fit to the data, particularly those containing natural environment and B-II domains. Interestingly, there are only two items on the FSS-II that are considered B-II and four items addressing the natural environment domain.

Although this study contains much strength related to the initial cross-validation of specific phobia domains in African Americans, there are several limitations worth mentioning. First, the study relied solely on self-report data, which is often affected by factors associated with social desirability. Future studies might consider the use of multiple measures of phobic tendencies, as well as observational data collected during exposure of participants to feared stimuli. Future research with this population is needed to enhance the knowledge of the mode and manner in which specific phobias present and impact the lives of African Americans.

An additional limitation worth noting is the conceptual homogeneity of African Americans in the current sample. As noted by Carter, Sbrocco, and Carter (1996) the conceptualization of anxiety and related constructs in African Americans would likely be more precise when measures of racial identity and acculturation are included to account for the heterogeneity that exist within African Americans, which would account for the higher order factor of ethnicity.

Additionally, the current sample was predominantly female (91%) which may limit the generalizability of these findings to African American males. Future work examining the factor structure of the FSS in a community-dwelling, African American male sample would undoubtedly contribute to the paucity in this area. Although the prevalence of phobias in general has been higher among women, the prevalence of phobias in African American adults is still unclear.

Despite the limitations of the study, the data derived from this cross-validation is a key contribution towards the nascent area of research on anxiety disorders in ethnic minorities. The identification of a pattern of specific phobia manifestation in African Americans has implications for future research concerning other ethnic differences in anxiety disorder presentation. It appears that both social and animal fear domains, at least in African American samples, deserve further consideration in both research and clinical settings given that these fears are typically secondary or tertiary to more “debilitating” forms of anxiety. Further investigation of these particular fear domains reveals the need to make these constructs more salient in future work since the underlying mechanism of these fears in African Americans appears to identify culturally specific factors that may explain differences in specific phobia endorsement. Further research in this area is needed to identify cultural variables that contribute to the apparent differences in anxiety disorders across various ethnic groups.

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