

Published in final edited form as:

*Cultur Divers Ethnic Minor Psychol.* 2014 July ; 20(3): 307–315. doi:10.1037/a0035343.

## Anxiety symptomatology and perceived health in African American adults: Moderating role of emotion regulation

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### Abstract

Though emotional health has been theoretically and empirically linked to physical health, the anxiety-physical health association in particular is not well understood for African American adults. This study examined anxiety as a specific correlate of perceived health in addition to testing the potential moderating role of emotion regulation, an index of how and when individuals modulate emotions, in the association for anxiety to perceived health. Study participants were 151 community-based African American adults who completed measures of anxiety symptomatology and emotion regulation in addition to responding to a self-report question of perceived health. Results showed that higher levels of anxiety symptomatology were associated with poorer health ratings for those who reported more limited access to emotion regulation strategies but not those who reported having more emotion regulation strategies. The findings suggest that anxiety-related distress and health problems may be interrelated when emotion regulation strategies are limited.

### Keywords

anxiety; health; emotion regulation; African Americans

Theoretical and empirical associations for emotional health and physical health have been well-established (Cohen & Herbert, 1996; Evans et al., 2005; Penninx et al., 1999). Available studies suggest that persons who experience depressive symptoms and other forms of psychological distress are also more likely to be diagnosed with physical disability, chronic pain, stroke, diabetes, heart disease, and cancer—conditions for which African Americans' elevated rates are well-documented (American Heart Association, 2007; U.S. Department of Health and Human Services, 2000; Wong, Shapiro, Boscardin, & Ettner, 2002;). In general, persons who experience diminished emotional health are also more likely to perceive themselves as having poor physical health. Most studies, however, have emphasized depression, affective states, and psychological distress as correlates of physical health while anxiety and related symptoms have been understudied particularly for African Americans.

Anxiety disorders are reported to have a more chronic course among African Americans such that anxiety pathology is experienced for longer periods of time, at higher levels of

perceived distress, and with less adequate treatment than for European Americans (Brenes, 2008; Breslau et al., 2005, 2006; Chapman, Kertz, & Woodruff-Borden, 2009). Available research suggests that anxiety disorders may manifest differently in African Americans such that the behavioral patterns, conceptualization, and cultural idioms of distress differ from those of European Americans (Neal & Turner, 1991). Few studies, however, have offered empirical or conceptual insight to anxiety pathology for African Americans or how such pathology affects perceptions of health. We posit that anxiety symptomatology is associated with perceived health particularly in the absence of stress-buffering, emotion regulation resources.

Investigations specifically in emotion regulation are consistent with stress-buffering models (Wheaton, 1985) whereby persons who report high coping resources demonstrate more adaptive responses to distress. As such, models of high versus low emotion regulation may shed some light on the anxiety-health association for African American adults and build on other findings whereby emotion and emotional experiences have been found to be related to both health outcomes and to anxiety (Williams, Chambless, & Ahrens, 1997). Hunter and Schmidt (2010) identified heightened attention to the perceived threat of physical illness as a critical factor in anxiety pathology for African Americans due in part to the interpretation of somatic symptoms of anxiety. This association may coincide with reports that African Americans are more likely to report anxiety as somatic rather than cognitive complaints (Chapman, Kertz, & Woodruff-Borden, 2009; Jeurtin-Roberts, Snowden, & Miller, 1997; Kirmayer, 2001). Importantly, the experience of anxious symptoms and poor health may be influenced by emotion regulation such that the hypervigilance that some African Americans experience impacts the emotion regulatory process. The present study was designed to (1) examine the association between anxiety symptoms and perceived health in a sample of African American adults and (2) specifically test the possible moderational/buffering role of emotion regulation.

## Anxiety Symptoms and Perceived Health

There is evidence of a manifold relationship between anxiety pathology and non-psychiatric medical illness. Epidemiological reports indicate that chronic medical conditions are more prevalent for people with a lifetime history of an anxiety disorder (Wells, Golding, & Burnam, 1989). Kagee (2008) found elevated levels of both anxiety and depression in South African patients receiving treatment for hypertension and diabetes. African Americans diagnosed with panic disorder experience higher rates of hypertension (Neal et al., 1994), a condition for which African Americans are almost twice as likely to be diagnosed relative to European Americans (American Heart Association, 2007). Consistent with these findings, Karaigi et al. (1990) suggested that anxiety disorders can contribute to the development of some health conditions and/or exacerbate existing health conditions. Similarly, medical conditions, such as hypertension, can contribute to the development of anxiety disorder and/or exacerbate anxiety symptomatology (McCue & McCue, 1984; Raj, Corvea, & Dagon, 1993). African Americans' increased awareness of the negative outcomes of physical illnesses (Bosworth et al., 2006; Morenoff et al., 2007) may amplify somatic anxiety. Several researchers (cf. Carter et al., 1999; Gupta & Pérez-Edgar, 2012; Hunter & Schmidt, 2010) have suggested that this awareness of dire physical health may be reflected

in interpretations of somatic anxiety as physical illness. Together, the findings highlight the need for more well-defined investigations in the anxiety-health association particularly for African Americans.

## Emotion Regulation, Anxiety, and Health

Emotion regulation has been linked to both negative affective states, including anxiety, and physical health outcomes. The construct of emotion regulation, however, has been challenging to pinpoint at times due to varying beliefs about what constitutes emotion regulation (i.e., inhibition, maintenance of emotion behavior, and/or self-management; Thompson, 1994) and also because of the multifaceted nature of emotion. Thompson (1994) defined emotion regulation as “the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions (p. 27)”. Emotion regulation has been similarly conceptualized as the “processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions...” (Rottenberg & Gross, 2003, p. 229). Emotion regulation occurs when individuals decrease or suppress negative emotional responses and/or increase positive emotional responses. A large portion of the developmental literature on emotion regulation has focused on infancy through childhood as a fundamental period for the acquisition and learned utilization of emotion regulation strategies through temperament, personality, and family processes (John & Gross, 2004). Current research findings also suggest that emotion regulation processes may continue to develop and change throughout adulthood (Gross & John, 2002).

The examination of long-term patterns of emotion regulation strategies in adulthood can provide insight into adverse mental and physical health outcomes. Studies that examine individual differences in emotion regulation patterns for adults (i.e. suppression and reappraisal) note that there are many pathways to emotion regulation failure and ‘misregulation’ that are often context driven (Gross, 2013). Emotion regulators demonstrate the capacity to be aware of current emotional states while also having strategies to respond to a variety of emotional states (Cole et al., 2004; Gratz & Roemer, 2004). Maladaptive emotion regulation processes have been associated with depression (Joormann & Gotlib, 2010), borderline personality disorder (Gratz & Roemer, 2004), and suicide (Pisani et al., 2013) though most predominantly in Caucasian populations. Individuals who demonstrate poor emotion regulation have difficulties identifying and conceptualizing their emotions and utilizing effective strategies to cope with emotions. As the literature on emotion regulation as a correlate of maladaptive and adaptive processes evolves, critics argue that there remains a dearth of research examining the role of emotion regulation difficulties in the development and/or maintenance of clinical difficulties in adult populations (Gratz & Romer, 2004).

A growing body of research has begun to shed light on the relationship between emotion regulation skills and anxiety disorders. Tull, Rodman, and Roemer (2008) found that, among individuals who experienced uncued panic attack, fear of bodily sensations emerged as a significant predictor of avoidance and emotional non-acceptance above and beyond other key predictors. This learned fear of bodily sensations may incite hypervigilance to certain stimuli such as intense emotional states that evoke physiological arousal that mimic anxiety

symptoms. Additional research has noted that the tendency to negatively evaluate and fear bodily sensations associated with anxious arousal and anxiety sensitivity may contribute to the active constriction of emotional experience, resulting in difficulties identifying and differentiating between emotional states (Devine, Stewart, & Watt, 1999; Zeitlin & McNally, 1993). The presence of anxiety symptoms may contribute to emotional avoidance and subsequent difficulty with adaptive emotion regulation that lead to certain health consequences.

African Americans have been shown to report lower emotional expression (Brantley et al., 2002), demonstrate greater emotion inhibition (Consedine & Magai, 2002), and present greater emotional defensiveness (Steele, Elliot, & Phipps, 2003) than European Americans. These patterns of emotion regulation are thought to have health implications such as elevated physiological response (cf. Goldstein & Niaura, 1992; Jamner & Leigh, 1999). While inhibition has seemed maladaptive on the one hand, both repressive coping styles and active processing of emotions and emotional expression have been linked to adaptive well-being and positive health reports (Austenfeld & Stanton 2004; Brosschot & Janssen, 1998). The impact of emotions and emotion inhibition on health may differ within cultural groups contingent on how the emotional experience is interpreted (Rolloff & Ifert, 2000).

## The Present Study

Consistent with the buffering hypothesis, the overarching goal of this study was to examine the moderating role of emotion regulation in the relationship for anxiety symptoms to perceived health in a sample of African American adults. The explicit hypotheses for the current study were (1) higher levels of anxiety symptoms would be associated with poorer perceived health; (2) emotion regulation would moderate the relationship between anxiety symptoms and perceived health such that the association between self-reported anxiety symptomatology and perceptions of health would be significant only for those who report emotion regulation difficulties; and (3) two specific dimensions of emotion regulation--limited access to emotion regulation strategies and nonacceptance of emotional experiences--would moderate the relationship between anxiety and perceived health such that increased anxiety symptomatology is associated with poorer perceived health for those who demonstrate higher levels of limited access to emotion regulation strategies and higher levels of nonacceptance of emotional experiences (See Figure 1). The two specific subdomains were strategically probed because there is evidence that (1) African Americans have been socialized to use expressive control, perhaps as a strategy to mitigate perceived threats of racial/ethnic discrimination (Dilworth-Anderson, Burton, & Johnson, 1993) or concerns regarding the consequences of free expression in unsafe, racially-charged environments (Brody & Flor, 1998) and (2) difficulties identifying emotions and expressing feelings (i.e., alexithymia) has been associated with increased pain significantly more so for African Americans than European Americans.

We hypothesized that these associations would exist above and beyond potentially confounding effects of age, sex, and also race-related stress. Thus, we controlled for age (Cockerham, Sharp, & Wilcox, 1983) and sex (Anson, Paran, Neumann, & Chernichovsky, 1993) differences in perceived health and emotion regulation (Blanchard-Fields, Stein, &

Watson, 2004) in all analyses. Though race-related stress was not central to the model, we also controlled for race-related stress given the well-documented associations for racial discrimination and anxiety (Soto, Dawson-Andoh, & BeLue, 2011; Utsey & Payne, 2000) and also for racial discrimination and health outcomes (Pascoe & Smart-Richman, 2009; Williams, Jackson, & Anderson, 1997; Williams & Mohammed, 2009) for African Americans. Pascoe and colleague's (2009) review of 134 articles indicated that multiple forms of perceived discrimination, including race-based discrimination, had a significant negative effect on both mental and physical health. Williams and Mohammad's (2009) review similarly found that perceived racial discrimination was related to negative effects in multiple health outcomes including mental health, physical health, health behaviors (e.g. cigarette smoking and alcohol use), and health seeking behaviors.

## Method

### Participants

The participants were a community-based, non-clinical sample of 151 male (47.0%) and female (49.0%) African American adults recruited from a moderately-sized southern U.S. city via posted flyers, religious institutions, community centers, and word of mouth. The mean age for the total sample was 34.30 years ( $SD = 12.10$  years) with age range 18–59 years. The majority of participants were characterized as “single, never married” (66.0%). Approximately 13 percent reported that they were married; 16% indicated that they were divorced. The majority of participants also identified that they, their parents, and grandparents were born in the U.S. (69%); 23% identified that they or their parents were born outside of the U.S. The highest level of education was reported as “some high school” for approximately 1/3 of the sample ( $n=46$ ); approximately 1/3 ( $n=44$ ) of participants indicated that they had some college education.

### Procedure

The present study was granted full institutional review board approval. Potential study volunteers were invited to participate in a brief phone interview to assess age and appropriateness for study participation. Interviewees who were less than 18 years of age or who did not identify as Black/African American or who reported loss of consciousness within the past 24 hours were not included in the study. Five potential participants were not invited to participate in this study due to self-reported substance use-related loss of consciousness that may impact cognitive functioning and subsequent capacity to provide informed consent. Upon consent, each participant was administered a paper and pencil battery of questionnaires as part of a larger study of stress, coping, and resilience. Approximately 1 ½ to 2 hours were required to complete the battery of questionnaires. Participants were informed that participation in the study could cease at any time and that referral for emotional health services would be available if needed. Each participant received \$25 for her/his time and effort.

### Measures

**Demographics form**—The demographics questionnaire queried personal characteristics such as age, sex, and education. Additionally, perceived health was assessed via response to

the question, “Would you say that, in general, your health is: Excellent, Very good, Good, Fair, or Poor?” “Excellent” was coded as 1, “Very Good” as 2, “Good” as 3, “Fair” as 4, and “Poor” as 5. This strategy for assessing perceived health is widely used and has been evaluated as an effective means for assessing individual health status (DeSalvo et al., 2006; Idler & Benyamini, 1997).

**Beck Anxiety Inventory (BAI)**—The BAI (Beck et al., 1988) is a 21-item self-report questionnaire used to measure level of anxiety symptoms. Respondents’ scores are rated on a 4-point Likert-type scale with 0 indicating “not at all” and 3 as indicating “severe” anxiety. Total scores range from 0–63, with higher scores representing increased anxiety severity. The BAI has demonstrated excellent internal consistency (Beck et al., 1988). It is notable, however, that in a confirmatory factor analysis of the BAI, Chapman et al. (2009) found that the previous two-factor structure for the BAI did not provide the best fit for African American study participants. They found that an alternative two-factor (somatic and cognitive) solution was particularly suitable for the African American subsample noting that African Americans self-reported anxiety may manifest as somatic symptoms. For the current study,  $\alpha = .93$ .

**Difficulties in Emotion Regulation. Scale (DERS)**—The DERS (Gratz & Roemer, 2004) is a 35-item measure that assesses emotion dysregulation on six dimensions: lack of acceptance of emotional responses, inability to engage in goal-directed behaviors, difficulties controlling impulsive behaviors, lack of emotional awareness, lack of accessibility to effective emotion regulation strategies, and lack of emotional clarity. For the purpose of the current study, only the lack of acceptance and limited access to emotion regulation subscales along with the DERS-total score were used. Participants were asked to indicate how often the items apply to them. Possible responses range from 1 to 5, whereby 1 represents “almost never (0–10%),” and 5 represents “almost always (91–100%).” The DERS has demonstrated good internal consistency, construct validity, and predictive validity (Gratz & Roemer, 2004). No known estimates are available regarding construct or criterion-related validity for use of the DERS with African American or other Black populations. For the current study, DERS-total  $\alpha = .93$ . Alpha reliability for the lack of access and lack of acceptance subscales were .80 and .82, respectively.

**Index of Race Related Stress-Brief (IRRS-Brief)**—The IRRS-Brief (Utsey & Payne, 2000) is a 22-item instrument used to measure the cumulative stress experienced by African Americans as a result of chronic exposure to racism. The IRRS-Brief provides a global racism index along with three subscales: cultural racism, institutional racism, and individual racism index. Only the global racism score was used for the current study. Respondents are directed to indicate racism events experienced and the impact that each racism event had on them using a 5-point Likert scale. Possible responses range from “0” (this has never happened to me) to “4” (event happened and I was extremely upset). Summing the items for each IRRS subscale produces a total score for each that is then summed to a global index score. Higher global index scores for the IRRS are indicative of higher levels of race-related stress. Internal consistency for the IRRS-Brief global index has been reported to be adequate, with Cronbach’s alphas ranging from .77 to .90 for community samples (Thomas



& Speight, 2010; Utsey et al., 2002). Utsey (1999) reported sufficient convergent and construct validity for the IRRS-Brief relative to the Racism and Life Experience Scale-Revised (Rales-B) Self and Group subscales as a measure of African American adults' race-related stress. For the current study, the Cronbach's alpha was .93 and indicative of good internal consistency reliability.

## Results

Means, standard deviations, and intercorrelations for all measures are presented in Table 1. Most participants reported their general health as "good" or "very good" (66.3 %). As Table 1 shows, self-reported symptoms of anxiety were correlated with self-reported perceived health ( $r = .29, p < .01$ ) such that the more symptoms of anxiety that were reported, the lower one's perceived health. As expected, difficulties with emotion regulation was associated with symptoms of anxiety and perceived health such that higher scores on difficulties with emotion regulation were correlated with more reported symptoms of anxiety ( $r = .35, p < .01$ ) and also poorer perceived health ( $r = .17, p < .01$ ). Also, higher scores on limited access to emotion regulation strategies were correlated with more symptoms of anxiety ( $r = .47, p < .01$ ) and poorer perceived health ( $r = .32, p < .01$ ); higher scores on nonacceptance of emotional experiences were also correlated with more symptoms of anxiety ( $r = .33, p < .01$ ) and poorer perceived health ( $r = .25, p < .01$ ).

## Tests of Moderation

Three hierarchical linear regression analyses were conducted to identify the presence and nature of main and moderating effects (Cohen & Cohen, 1983) while controlling for the potential confounding influence of individual variables (i.e., age, sex, race-related stress) in all analyses (see Table 2) in Step 1. As recommended, scale scores were mean-centered to reduce multicollinearity between the main effect and interaction terms (Cohen & Cohen, 1983). To test a main hypothesis that DERS-total would moderate the BAI-perceived health association, a hierarchical regression analysis was conducted with BAI scores as the predictor variable and perceived health ratings as the criterion variable. Sex and age were entered in Step 1 as covariates to control for any potential confounding influence of participants' sex and age due to previous suggestions (e.g., Idler & Benyamini, 1997; Williams & Mohammed, 2007) that these variables influence perceptions of health and symptoms of anxiety. Scores for the IRRS-Brief were also entered in Step 1 to control for race-related stress. As Table 2 (Model 1) shows, a main effect was found for BAI scores, but not for DERS-total entered at Step 2. The cross-product for BAI x DERS-total, entered at Step 3, was also not significant. The overall model that included age, sex, IRRS-Brief, BAI scores, and DERS-total was, however, significant [ $F(6,137) = 7.12, p < .01$ ] and accounted for 25% of variance in predicting perceived health.

A second regression analysis (model 2) was conducted to assess whether the specific dimension of emotion regulation, nonacceptance of emotional experiences, would significantly moderate the BAI-perceived health association. As shown in Table 2, a significant main effect was found for BAI scores entered at Step 2. The main effect for DERS-nonacceptance scores, also entered at Step 2, approached significance. However, the

interaction, BAI x DERS-nonacceptance, was not significant. The overall model that included age, sex, IRRS-Brief, BAI scores, DERS-nonacceptance, and perceived health was significant [ $F(6,137) = 7.42, p < .01$ ] and accounted for 25% of variance in predicting perceived health.

A third regression analysis (model 3) was conducted to assess whether the specific dimension of emotion regulation, limited access to emotion regulation strategies, would significantly moderate the BAI-perceived health association. DERS-limited and BAI scores were entered at Step 2. Significant main effects were found for both BAI scores and DERS-limited. The BAI x DERS-limited interaction term entered at Step 3 was also significant. After accounting for potential effects of sex, age, and IRRS-Brief, a significant overall effect was found for the regression equation [ $r = .184; F(6, 137) = 8.67, p < .01$ ] whereby sex, age, IRRS-Brief, anxiety symptoms, limited access to emotion regulation strategies, and the interaction term accounted for 28% of the variance of predicting perceived health.

Evidence of DERS-limited as a moderator was indicated by a statistically significant increment in variance (i.e.,  $R^2$ ) accounted for by the interaction terms and  $\beta$  at Step 3 in the regression analyses (See Table 2). Following Cohen's (1992) recommendations, it was determined that  $R^2 .02$  is indicative of unique contributions to the overall variance. To explore the patterns underlying the significant interaction effects, regression slopes for the interaction were calculated. Following convention (Cohen & Cohen, 1983; Frazier, Tix, & Barron, 2004), we tested the significance of the interaction slopes at 1 SD above the mean and 1 SD below the mean by transforming the interaction predictor 1 SD above and 1 SD below the mean. Finally, a new interaction product was generated using the transformed interaction predictor and BAI scores; see figure 2. For BAI scores predicting perceived health, we found that the slope of the line one standard deviation above the DERS-limited ( $\beta=0.38, t(140)=2.42, p<.05$ , was statistically significant from zero, but the slope of the line one standard deviation below the mean ( $\beta=0.16, t(140)=1.65, p>.05$ , was not. Analysis of the significance of the simple slopes reveals that BAI scores predicted perceived health ratings for participants with high DERS-limited but not those with less limitation.

## Discussion

The current study adds to the extant literature in two critical ways: Despite the individual burden of both anxiety pathology and health disparities for African Americans as well as empirically supported associations for anxiety and health, no known studies have examined the relationship between general symptoms of anxiety and perceptions of health in African American adults. Second, few studies have examined the mechanism by which anxiety might escalate negative perceptions of health. Consistent with our hypothesis, health ratings were inversely related to anxiety symptoms such that higher levels of anxiety symptomatology were associated with poorer perceived health in the current sample of African American adults. This finding lends some support to previous speculation that African Americans' reporting of anxiety and physical illness may be interrelated (Carter et al., 1999) given common symptom patterns (Rosenbaum, White, & Gervino, 2012; Schmidt et al., 2008). As anxiety disorders are found to have a more chronic course particularly for



African Americans, our results support the need for future research that examines pathways to poorer perceived health and other chronic conditions.

It is notable that the buffering effect of emotion regulation was observed above and beyond potential effects of age, sex, and race-related stress. There is substantial evidence that age and sex are independently robust predictors of health perceptions and that African Americans' health profiles are uniquely influenced by chronic racial discrimination. Future studies should explore the impact of racism-related factors such as institutional discrimination and internalized racism that exist in varying contexts. The current findings suggest that one's capacity to access varied emotion regulation strategies is critical to buffering anxiety-related distress.

Although anxiety symptom profiles may be related to health perceptions, the anxiety sensitivity literature in particular may provide a useful rubric for understanding heightened sensitivity to health outcomes. Most anxiety sensitivity research has focused on its association with panic disorder, panic attacks, and other psychological disorders (Ginsberg Drake, 2000; Schmidt, Lerew, & Jackson, 1997; Taylor, Koch, & McNally, 1992). However, there is a growing body of research that has examined anxiety sensitivity in relation to the exacerbation of chronic pain, chronic health conditions, and decrements in physical functioning (e.g., Asmundson et al., 2000; Tsao et al., 2007). Tsao and colleagues (2007) found that higher anxiety sensitivity was associated with poorer perceived general and mental health for children diagnosed with chronic pain. Both conceptually and empirically, investigations in anxiety sensitivity may offer an important opportunity for gaining insight to the anxiety-health association in underserved African American adults.

We posited that anxious African Americans who also experienced difficulty regulating emotions might be more inclined than those who did not experience such difficulty to report poorer health ratings. Consistent with our prediction, limited access to emotion regulation strategies significantly moderated the association for symptoms of anxiety to perceived health. For persons who report average or higher levels of emotion regulation, anxiety and health were unrelated. Some African Americans may have difficulty differentiating somatic distress and perceive anxiety and physical sensations as synonymous (cf. Devine, Stewart, & Watt, 1999; Zeitlin & McNally, 1993). It might be that the limited access to emotion regulation strategies increases the likelihood of using rigid, maladaptive coping strategies that adversely affect health perceptions. Researchers have argued that it is most adaptive to be able to flexibly alternate between coping strategies depending on the situational context (Cole et al., 2004; Gratz & Roemer, 2004). If so, further investigation is needed to examine the possible protective effects of accessing multiple emotion regulation strategies and the possible deleterious effects of rigid emotion regulation.

Overall, these findings reaffirm a need to more fully understand the complex construct of emotion regulation and the functions that emotions serve. Gross and colleagues have contributed much to this body of research. As emotion regulation strategies differ in cognitive, affective, and social consequences (Gross, 1999), individuals regulate their emotions in a wide variety of ways that could be maladaptive or adaptive when taking context into consideration. Gross's (2001) theoretical construction of emotion regulation

suggests that reappraisal [the adjustment of how we think about a situation in order to decrease its emotional impact], is more effective than suppression [inhibiting the outward signs of emotion], though individual differences also play a role in emotion regulation processes (Gross & John, 2003; Peters, 2006). Additionally, Gross and colleagues have argued that maladaptive coping via emotion suppression has physiological as well as cognitive and social consequences, which can contribute to psychological distress and poorer health outcomes (Gross & Levenson, 1993; Richards & Gross, 1999). As the question of whether some forms of emotion regulation are healthier than others remains unclear (Karademas, Tsalikou, & Tallarou, 2011), future research should examine individual differences of emotion regulation strategies to bridge the gap for emotion regulation and its association to both physiological and psychological processes.

### Study Limitations and Future Directions

Although this study makes several preliminary contributions to the health psychology literature, some potential limitations should be noted. First, the results are based on cross-sectional data. As such, no causal associations regarding the role of increased anxiety symptoms in health perceptions can be inferred from the current results. Anxiety and perceptions of health are interrelated in that symptoms of anxiety might lead to perceptions of one's health as poor, but the reverse could also be true. Nevertheless, if poor health leads to increases in anxiety pathology, inadequate emotion regulation may still be at play. Future studies might employ a prospective design to examine this temporal association and the intermediate role of emotion regulation.

Though the recruitment of a southeastern community sample was a strength of the study in that U.S. epidemiological reports reveal that certain indicators of health are worse in southern Atlantic states than in other regions of the U.S. (Baskin et al., 2005), a potential limitation is that the findings may be limited to working age African Americans who reside in that region. Also, elderly African American adults, who experience increased burden of chronic disease, may report overwhelmingly poor health apart from anxiety symptomatology or emotion regulation strategies. Future studies should examine the role of anxiety pathology and emotion-focused coping in older African Americans and for African persons in other parts of the diaspora.

Another potential limitation of the study involves the complexity of emotion regulation, which may not be fully captured by available self-report methods. Though the current results revealed a buffering effect of access to emotion regulation strategies, the emotion regulation construct is complex. This complexity is made more salient by the absence of psychometric analyses associated with scales such as the DERS. Research examining alternative forms of emotion dysregulation such as alexithymia and its health-related consequences (Allen et al., 2011) may offer an additional and relevant research avenue that facilitates a deeper understanding of the role of emotion regulation in health perceptions for African Americans.

### Conclusion

Overall, the current findings may have some important implications for future research and intervention strategies. Investigating culturally-relevant emotion regulation strategies are

warranted given likely consequences for both physical and mental health outcomes. Available research suggests that racial, ethnic, and cultural factors are critically important to understanding the impact of stress on ethnically diverse groups (Matsumoto, 2005; Peters, 2006). Doing so would provide a more nuanced understanding of how sociocultural factors can both enhance or impede emotion regulation strategies development over the life course (Barbarin, 1993) and advance public health efforts toward health equity.

## Acknowledgments

This research was supported in part by funds from the National Institute on Drug Abuse (NIDA) Core Center of Excellence grant (P30 DA027827) and the University of Georgia Research Foundation awarded to Rheeda L. Walker, Ph.D.

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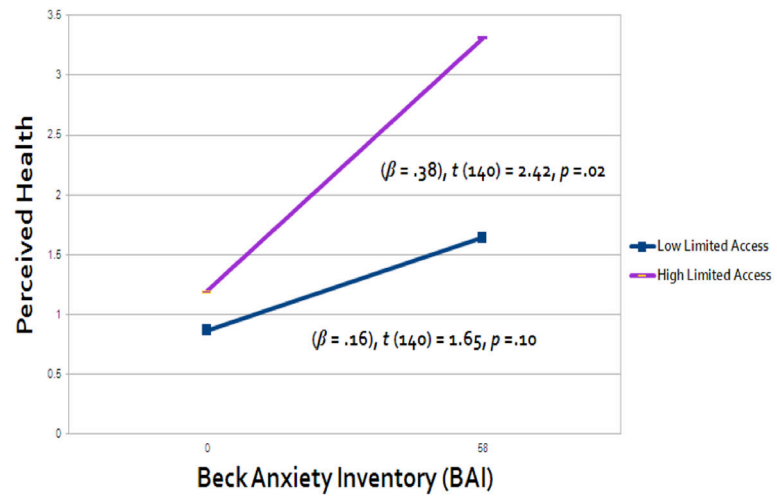


Figure 1.

**Table 1**

Means, Standard Deviations, and Zero-Order Correlations Among Measured Variables (n = 152).

	1	2	3	4	5	6	7	8	M	SD
1. BAI	1								13.23	11.78
2. Perceived Health	.29**	1							2.47	1.01
3. DERS-Total	.35**	.17*	1						90.05	22.59
4. DERS-Limited Access	.47**	.32**	.84**	1					16.21	5.84
5. DERS-Nonacceptance	.33**	.25**	.78**	.70**	1				13.53	5.82
6. IRRS-Brief	.32**	.10	.24**	.24**	.19*	1			39.03	21.07
7. Age	.40	.33**	-.01	.05	.11	.17*	1		34.35	12.07
8. Sex	-.02	.24**	.01	.07	-.03	.05	.12			

Note. BAI = Beck Anxiety Inventory; DERS-Total = Difficulties in Emotion Regulation, total score; DERS-Limited Access = Difficulties in Emotion Regulation- Limited Access to Emotion Regulation Strategies; DERS-Nonacceptance = Difficulties in Emotion Regulation-Lack of Acceptance of Emotion Responses; IRRS-Brief = Index of Race Related Stress-Brief. Sex was coded as 0=male; 1=female

#  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

Table 2

Hierarchical Multiple Regression Analyses of DERS-Total, Nonacceptance, Limited Access, and Anxiety Symptomatology Predicting Perceived Health

Model	Step/ Variable	$\beta$	$R^2$	$t$	Coefficient $p$
All	Step 1: Age	.31**	.15	3.79	.00*
	Gender	.20*	.13	2.49	.01*
	IRRS-Brief	.02#	.13	0.23	.82
(1)	Step 2: BAI	.29**	.24	3.32**	.00*
	DERS-Total	.06	.24	.72	.48
(2)	Step 3: BAI X DERS-Total	-.12	.25	-1.12	.25
	Step 2: BAI	.26**	.23	3.08**	.00*
	Nonacceptance	.14#	.22	1.72	.09
(3)	Step 3: BAI X	.01	.22	.08	.94
	Nonacceptance				
	Step 2: BAI	.23*	.26	2.60*	.01*
	Limited Access	.18*	.26	2.10*	.04*
	Step 3: BAI X	-.18*	.28	-2.03*	.04*
	Limited Access				

Note. IRRS-Brief = Index of Race Related Stress-Brief; DERS-Total = Difficulties in Emotion Regulation, total score; BAI=Anxiety symptomatology; Limited Access = Difficulties in Emotion Regulation, Limited Access to Emotion Regulation Strategies subscale; Nonacceptance = Difficulties in Emotion Regulation, Nonacceptance of Emotional Experiences subscale.

#  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .