

Anxiety and depression:
The moderating roles of self-perception and race

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Abstract

It has been shown that children with elevated anxiety levels are at a higher risk for developing depressive symptoms (e.g., Seligman & Ollendick, 1998). Furthermore, it has been shown that high self-worth may serve as a protective factor against developing both anxiety and depressive symptoms (e.g. Costello et al., 2008). The primary focus of the current research was to evaluate the moderating role that self-worth played in the predictive relationship *between* anxiety and depression. A second avenue of interest for the current research was the exploration of the role that race played in these predictive relationships between anxiety, depression, and self-worth. Using an ethnically diverse sample of 726 middle school children regression analyses were run to examine the predictive relationship between anxiety symptoms and depressive symptoms, as well as the potential moderating role of self-worth. Additionally, a three way interaction was examined between gender, racial group, and anxiety in the prediction of depressive symptoms. Analyses showed that both self-worth and anxiety symptoms were significantly related to depressive symptoms. However, self-worth and race were not moderating variables in the relationship between anxiety and depression. Furthermore, there was not a significant three way interaction between gender, racial group, and anxiety in the prediction of depression. The discussion includes an examination of the limitations as well as possible future directions for research.

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I. Introduction

Internalizing disorders such as anxiety and depression are pervasive and affect children of all ages. Anxiety disorders in children and adolescents have a prevalence rate that ranges from 12% to 17.3% (Lewinsohn, Gotlib, Steeley, & Allen, 1998; Vasey & Ollendick, 2000) whereas depressive disorders are seen in about 1%-2% of children and 3%-8% of adolescents (Horowitz & Garber, 2006; Tram & Cole, 2000). The literature also suggests that adolescents experience higher rates of depression than adults (Wight, Sepulveda, & Anshensel, 2004). Despite these prevalence rates, children and adolescents who suffer from these internalizing disorders are more likely to go undetected because their symptoms tend to lead to withdrawal and avoidant behaviors. This leaves these children relatively unnoticed, especially in comparison to children with externalizing, acting out, and inattentive and hyperactive behaviors. The nature of internalizing disorders has led to the misconception that they are less problematic than oppositional or attention deficit/hyperactivity disorders and therefore they receive less attention in clinical research and practice. Fortunately, there has been a resurgence of interest in childhood internalizing disorders in recent years; however there is still a great deal that remains to be done.

An important aspect of internalizing disorders is the frequency of comorbidity with other disorders, including other internalizing disorders. Findings have shown that 15.9% to 61.9% of children who identify as anxious also have a comorbid anxiety or depressive disorder (Brady & Kendall, 1992). Additional research has shown that children with elevated anxiety levels are at a higher risk for comorbid depressive symptoms (Seligman & Ollendick, 1998). There is a wealth of literature which supports that there is a relationship between anxiety and depression in

children, however questions still remain on the how and why this relationship exists (Ollendick, Jarrett, Grills-Taquechel, Hovey, & Wolff, 2008).

One avenue for exploration in the relationship between anxiety and depression may be low self-worth. Although this may seem intuitive, surprisingly little research has been done to provide empirical evidence to support this notion. Previous literature has shown that high self-worth may serve as a protective factor against developing depressive symptoms. For example, one study found that there was a significant inverse relationship between high self-worth and anxiety and depression (Garaigordobil, Perez, & Mozaz, 2008).

By further evaluating the comorbidity between anxiety and depressive symptoms the current research hopes to elucidate different factors associated with the relationship between anxiety and depression in youth. The current research begins with a literature review which provides an overview not only of anxiety, depression, and self-worth in different racial groups, but also explores the overlap between anxiety and depression as well as the relations between depression and self-worth. An important aspect of this overview will be the articulation of why these concepts can be analyzed as separate constructs and why research still needs to be undertaken. A second avenue of interest for the current research is the exploration of the role that racial groups play in the relationship between anxiety, depression, and self-worth.

i Race/Ethnicity

In the past ten years, there has been a notable increase in the interest in race and ethnicity as a moderating variable in the development of psychopathology in children. Researchers have moved beyond looking at race and/or ethnicity as a variable only if it is “conveniently” available in their sample, to purposefully setting out to examine differences between racial/ethnic groups as important findings in their own right. In the current research, children were categorized as

being in different racial groups based on their self-report of race (i.e., African American and Caucasian). A perusal of the extant literature reflects that it is more common to use the term “racial/ethnic” when the group determination is simply self-report of which category a person most identifies with, and when this report includes groups consisting of at least African Americans, Caucasians, and Hispanics. The term “ethnicity” is reserved for use when aspects of the culture or acculturation are accounted for. Thus, for the current study, the term race was used as it is the most accurate description based both on the focus on African American and Caucasian children, and how the data were collected. However, when discussing research conducted by others, every attempt will be made to use the vernacular that they employed in their studies.

ii Depression

As noted above, prevalence rates suggest that about 1%-2% of children and 3%-8% of adolescents experience at least one episode of major depression (Horowitz & Garber, 2006). Depressive symptoms in children can be difficult to diagnose because they include behaviors that seem inconsistent with the common notion of depression, such as angry outbursts, fighting, and irritability. Depressive symptoms include a depressed mood (or in children, an irritable mood) most of the day, nearly every day, for a period of two weeks. They also include diminished interest or pleasure in activities, significant weight gain or loss and a change in appetite, sleep issues such as restlessness, difficulty falling asleep or staying asleep, psychomotor agitation, loss of energy, feelings of worthlessness or excessive guilt, diminished ability to concentrate or indecisiveness, or recurrent thoughts of death or suicidal ideations (APA, 2004, DSM-IV). The literature suggests that adolescent girls report more depressive symptoms than boys and they are almost twice as likely to develop major depression (e.g., Nolen-Hoeksema, 2001).

In addition to gender differences, studies have indicated a possible gender by race interaction in the development of depressive symptoms, and in fact, African American males have been shown to be at a greater risk for depression than African American females. To illustrate, Kistner, David and White (2003) analyzed race and gender differences in depressive symptoms in a large sample of youth. They administered the Children's Depression Inventory (CDI; Kovacs, 1985) to a sample of 902 youth (68% Caucasian, 29% African American, 3% other), with ages ranging from eight to 14 years. An interaction effect of race and gender indicated that CDI scores for African American and Caucasian children differed for boys but not girls, with African American males reporting significantly higher CDI scores than their male Caucasian peers. African American girls and Caucasian girls did not differ significantly from one another on CDI scores, however. When compared within race, African American boys reported significantly higher CDI scores than African American girls, whereas Caucasian girls reported higher CDI scores than Caucasian boys.

Further research is needed to identify children at risk for depression in order to provide adequate intervention. Early intervention is crucial because not only is the trajectory of early onset depression more dire the younger the child, the earlier the symptoms are detected the more effective interventions may prove to be (Garber, 2006). One avenue of research which may help identify children at risk for developing internalizing disorders is a better understanding of the relationship between anxiety and depression.

iii Anxiety

Anxiety symptoms in children are fundamentally based in the fear response (Albano, Causey, & Carter, 2001). Clinical anxiety can be defined as a negative thought process that leads to intense apprehension about the future. Children who experience anxiety symptoms are

reacting to fears ranging broadly from a fear of being separated from a parent, fear of a specific object, fear of social situations, to even more general fears in their day to day lives. Children who experience anxiety symptoms do so cognitively (e.g., automatic thoughts), physically (e.g., racing heart, sweat, aches and pains), behaviorally (e.g., avoiding anxiety provoking situations), and emotionally (e.g., crying, temper tantrums). Four central themes have been identified for clinical anxiety disorders: intensity, frequency, behavioral avoidance, and a reaction that is beyond control and cannot be reasoned away (Albano et al., 2001; Wenar & Kerig, 2000). There have also been gender differences highlighted in the child anxiety literature. Many studies have reported higher rates of anxiety in girls than boys. Lewinsohn et al. (1998), for example, found this gender difference not only in terms of number of symptoms but also in respect to age of onset and length of anxious episodes. They found that not only is anxiety more prevalent in girls, but by the age of six years girls are already twice as likely as boys to have experienced an anxiety disorder and are more likely to display anxiety symptoms for a longer period of time.

The literature is mixed on whether or not race plays an influential role on the development of anxiety symptoms. A great deal of the research conducted in this area has been undertaken with adults. There are, however, a few studies that have tackled racial differences in children and adolescents. These findings tend to mirror the findings with adults, where the end result is conflicting findings. McLaughlin, Hilt, and Nolen-Hoeksema (2007), for example, point out that while there have been advances in the research on depressive symptoms in children and race/ethnicity, there have been fewer large scale studies which analyzed race/ethnicity as an important variable in the development of anxiety symptoms. Using a sample of pre-adolescents, in grades six through eight (males, n= 545, females n=520), classified into one of four groups, White (n=141), Black (n=126), Hispanic/Latino (n=610), and other (n=180), McLaughlin et al.

(2007) examined both internalizing and externalizing symptoms. In terms of internalizing symptoms, more specifically, they looked at depression symptoms using the Children's Depression Inventory (CDI; Kovacs, 1992) and anxiety symptoms using the Multidimensional Anxiety Scale for Children (MASC; March et al., 1997). They found a significant effect of race/ethnicity by gender, with Hispanic females reporting higher levels of depression than the other groups. They also found that anxiety symptoms differed between gender and race/ethnicities, with Hispanic females and Black males reporting more anxiety symptoms than children in both the White group and the other group. Finally, they took their research a step further and conducted factor analyses on each symptom measure in each of the four ethnic groups in order to account for potential measurement equivalency issues. Although they cautioned that further research is needed, they reported that the factor structure was consistent across racial/ethnic groups for the measures used.

iv Anxiety and Depression

As noted previously, the prevalence rates for comorbidity between anxiety and depressive disorders range between 15.9% and 61.9% (Brady & Kendall, 1992; Seligman & Ollendick, 1998). Brady and Kendall also indicate that children with both an anxiety disorder and a depressive disorder exhibit more diverse symptoms of anxiety and depression than comparison groups with either an anxiety or depressive disorder alone. The literature also supports the notion that anxiety symptoms precede depressive symptoms, based on findings that overall child anxiety disorders have a lower mean age of onset than child depressive disorders.

Given the cognitive nature of depression, it is logical that developmentally a child may be more likely to experience fear and physiological symptoms associated with anxiety at an earlier age than mood-related and cognitive symptoms of depression. Children with both anxiety and

depression tend to be older than comparison groups of either pure anxiety or pure depression. Children with both anxiety and depressive symptoms also tend to be more symptomatic, with anxiety symptoms predating depressive symptoms. The debate between the similarity and differences of anxiety and depression initially led to two differing theories. The first theory was that anxiety and depression are simply different labels for an overall unitary construct; the second theory suggested that anxiety and depression share a dimension but are distinguishable by two additional dimensions. The second theory evolved into the tripartite model of anxiety and depression (Clark & Watson, 1991), and has been the basis of a great deal of research.

The tripartite model, developed by Clark and Watson (1991), provides a rich theoretical foundation for why there is a great deal of overlap between anxiety symptoms and depressive symptoms. The backbone of the theory is that anxiety and depression share a common dimension, negative affect. Negative affectivity is a persistent negative mood including nervousness, guilt, sadness, and anger. Negative affectivity in general has been labeled as a predictor for later emotional and behavioral problems in adolescence (Mash & Barkley, 2003). Whether more anxiety or more depressive symptoms are present is a reflection of the levels of two other dimensions: positive affect and physiological response. Low levels of positive affect are indicative of a depressed mood, whereas high levels of physiological arousal are indicative of heightened anxiety (Mineka, Watson & Clark, 1998). Furthermore, the tripartite model has been empirically supported in ethnically diverse samples, which suggests that the model may hold true across ethnicities (Lambert et al., 2004). The tripartite model demonstrates how anxiety symptoms and depressive symptoms reflect different constructs, and therefore, these intertwined yet separate constructs require further investigation. While research has been garnered which

reflects the intricate relationship between anxiety and depression, less research has been able to explore the mechanisms behind the relationship between anxiety and depression.

v Self-Worth/Self-Perception

A great deal of research has been conducted focusing on the self. However, throughout the years, the literature has become convoluted because of the different definitions and terms used to define the self (e.g., self-esteem, self-concept, self-worth, self-efficacy, self-perception, etc.). For purposes of the present research, the focus was on the construct referred to as “self-perception” which is further broken down into self-concept and self-worth (see Figure 1). Self-perception is a measure of a child’s belief in her or his own competence. Self-concept refers to how individuals evaluate themselves, and how they define themselves, in different areas of their lives. Research has shown that the self is multidimensional, that is, how individuals define themselves depends upon the domain they are considering. For example, in children, factor analyses have shown that the self can be partitioned into different domains such as social acceptance, scholastic competence, athletic competence, physical appearance, behavioral conduct, and global self-worth (Harter, 1988). Research has also indicated that youth place emphasis on different domains of their self, depending upon their experiences and the people they associate with and hold in high regard. It has also been shown that younger children tend to report high self-worth, but when they become older they tend to make more realistic appraisals of their relative strengths and weakness, which in turn is incorporated into their self-concepts (Marsh, Craven, & Debus, 1998). Self-worth, on the other hand, is an overarching global measure of how one perceives their worth as an individual person. However, this global self-worth is not a compilation of different aspects of self-concept; rather, it is a measure of how one sees her or his overall value as a person (Harter, 1998). For the main analyses of this study, the

focus within the child's self-perception will be on their report of global self-worth (i.e., the intrinsic value they have of themselves), with exploratory analyses of the five related constructs of self-concept.

A review of the literature indicates that there are conflicting findings regarding differences in self-worth between African American and Caucasian children, with some studies finding that Caucasian youth report higher self-worth scores whereas other studies finding in the opposite direction, with African American children reporting higher self-worth (e.g., Gray-Little & Hafdahl, 2000) and still other studies which find no significant differences between the groups. For example, in one study, Monete, Schneider, and Csikszentimihalyi (2001) found that although African American children reported a higher global self-worth, they rated their self-concept of living up to the expectation of others lower than Caucasian children. Research has also focused on how different underlying aspects of self-concept may hold more importance for those of different race and gender, which can result, at least on the surface, in comparable self-concept scores, while the reason beneath the global self-worth is vastly different. For example, one study found that the self-beliefs of African American girls and Caucasian adolescents of both genders in physical attraction were strongly correlated with global self-esteem, whereas there was a weaker relationship between the two for African American boys (Tashakkori, 1992).

A considerable amount of research has been conducted examining the relationship between self-worth and internalizing symptoms. For example, Dallaire et al. (2008) found that low self-worth significantly predicted depressive symptoms in an ethnically diverse sample of elementary school children. Also, as previously mentioned, Garaigordobil and colleagues (2008) found that there was a significant inverse relationship between high self-worth and anxiety and

depression. The literature suggests that a lower self-worth leads to a significantly higher chance of reporting both types of internalizing symptoms.

vi Depression and Self-Worth

There has been a great deal of debate involving the relationship between self-worth and depressive symptoms. More specifically, depressive symptoms can reflect a low sense of self-worth which has led researchers to ask if it is appropriate to treat self-worth and depressive symptoms as separate entities. While depressive symptoms can include low self-worth, longitudinal studies have shown that there is a temporal precedence between low self-worth and depressive symptoms. For example, Cole, Jacquez, and Maschman (2001) conducted a 4 year longitudinal study investigating perceived self-concept and depressive symptoms in children. Their study included both cross-sectional and longitudinal analyses. Their cross-sectional findings supported concurrent relationships between low self-concept and higher depressive symptoms. Their longitudinal analyses extended these findings to show that low self-concept significantly predicted later depressive symptoms, even after controlling for depressive symptoms reported at the first time point. In their summation, the authors concluded the level of the child's self-concept was crucial in the development of later depressive symptoms.

Research has also been conducted focusing on a possible bidirectional nature between self-worth and depressive symptoms which takes into account the possibility that self-worth and depressive symptoms may have a more transactional than linear relationship. For example, McCarty, Stoep, and McCauley (2007) sought to investigate cognitive features that were thought to lead to vulnerability towards depression using longitudinal analyses. They also found that low self-worth was a vulnerability to the development of depressive symptoms. While there is still a great deal of research needed to understand the relationship between self-worth and depression,

these studies provide a strong theoretical basis for analyzing these variables as two separate constructs.

vii Summary

The relationship between anxiety symptoms and depressive symptoms suggests that there may be intermediary factors which contribute to the development of comorbidity. One such factor may be self-perception (both self-concept and self-worth). The purpose behind the proposed research was twofold. First, the primary purpose was to further explore the relationship between anxiety symptoms and depressive symptoms, and the potential moderating effects that self-worth may have on the relationship. The second purpose was to further analyze this model by looking at possible differences between African American and Caucasian children.

Exploratory analyses were also conducted to specifically analyze potential effects different self-concept domains have on the relationship between anxiety and depression.

viii Hypotheses

Hypothesis 1A: Overall, anxiety symptoms as measured by the total score of the Multidimensional Anxiety Scale for Children (MASC: March, 1997) will predict depressive symptoms as measured by the total score of the Reynolds Adolescent Depression Scale (RADS: Reynolds, 1986). Specifically, higher anxiety symptoms will predict higher depressive symptoms (see Figure 2).

Hypothesis 1B: Self-worth, as measured by the global scale of the Self-Perception Profile for Adolescents (SPPA: Harter, 1985), will predict depressive symptoms as measured by the total score of the Reynolds Adolescent Depression Scale (RADS: Reynolds, 1986). Specifically, a lower self-worth will predict a greater number of depressive symptoms. (see Figure 3)

Hypothesis 2: Overall, the relationship between anxiety symptoms and depressive symptoms will be moderated by the child's self-worth, as measured by the Self-Perception Profile for Adolescents (SPPA: Harter, 1985). The literature has shown that self-worth can serve as a protective factor from the progression of internalizing symptoms including depressive symptoms and that a lowered self-worth can be associated with a greater number of internalizing symptoms (see Figure 4).

Hypothesis 3: The relationship between anxiety symptoms and depressive symptoms will be moderated by the child's race. African American children will be significantly more likely to develop depressive symptoms than Caucasian children (see Figure 5). A review of the literature suggests that African American children may be at a greater risk for developing depressive symptoms.

Hypothesis 4: There is some literature to suggest a possible three way interaction between anxiety symptoms, racial group, and gender in the prediction of depressive symptoms. It was hypothesized that there will be a significant interaction among these three variables in the prediction of depressive symptoms (see Figure 6), more specifically, that the relationship between anxiety and depressive symptoms will be stronger in African American male children.

In addition to these hypothesized findings, exploratory analyses were undertaken to examine the five different self-concept domains and their possible moderation of anxiety and depressive symptoms.

II Methods

i Participants

For the current study, an existing sample of 792 participants from two different middle schools in the Roanoke City Schools in Roanoke, Virginia was available for study (Byrd, 2000). Ages ranged from 11 to 14 years and grade levels varied from 6th to 8th grade. There were 389 males and 403 females in the sample. The sample was ethnically diverse and included Caucasians (n=478), African Americans (n=253), Biracial (n=28), Asians (n=11), Hispanics (n=10), Native Americans (n=8), Multi-racial (n=6) and other (n=1). The diversity of the sample is a major advantage to the potential generalizability across cultures, particularly for the Caucasian and African American populations. The analyses for the proposed research were undertaken with the African American and Caucasian children. The final sample included 726 children, 49.2% male, and 34.7% African American.

ii Procedure

The independent variable was anxiety symptoms as measured by the Multidimensional Anxiety Scale for Children (MASC). The MASC offers the ability to not only collect information on individual symptoms, but also allows for the symptoms to be clustered together for specific areas of anxiety in ways which have already been empirically validated in previous research (see Grills-Taquechel, Ollendick, & Fisak, 2008). The dependent variable was depressive symptoms as measured by the Reynolds Adolescent Depression Scale (RADS). The RADS is also a measure that has been empirically validated in previous research and affords the opportunity to not only look at individual symptoms of depression but also previously defined clusters of symptoms. The main moderator variable was self-worth as measured by the Self-Perception Profile for Adolescents (SPPA). The SPPA evaluates five different areas of self-

concept as well as a sub-measure of overall global self-worth (further discussed below). All three of these assessment instruments have been extensively used in child psychopathology literature and have been empirically validated.

Data were collected via self-report. Upon Institutional Review Board (IRB) approval from Virginia Tech and approval from the Research Review Board of the Roanoke City School District, two middle schools were selected for participation. Because no identifying information regarding the families was collected from the children, parental permission and child assent were not obtained, however participants were provided with a general description of the study and informed of their rights to participate or withdraw from the study. The questionnaires were administered in a group format during a pre-selected class period. Demographic information was collected through youth self-report and consisted of grade level, age, gender, race, class period and teacher's name.

iii Measures

Multidimensional Anxiety Scale for Children

The Multidimensional Anxiety Scale for Children (MASC: March, 1997) is a 39-item instrument designed to measure anxious symptoms in youth. It includes a total anxiety score, a social anxiety subscale, a harm avoidance subscale, separation anxiety/panic subscale and a physical symptoms subscale. The MASC has demonstrated good test-retest reliability ($r = .93$) and internal consistency ($\alpha = .87-.89$). It has also shown convergent validity with other self-report measure of anxious symptoms ($r = .63$) as well as divergent validity with self-reports of depression ($r = .19$). Utilizing a measurement with strong divergent validity helped ensure that anxiety and depression were measured as separate constructs and not as a unitary construct on a

continuum. The total score from this measure were used to assess anxiety symptoms, the independent variable.

Reynolds Adolescent Depression Scale

The Reynolds Adolescent Depression Scale (RADS: Reynolds, 1986) is a 30-item instrument designed to measure self-reported depressive symptoms in adolescents. It measures cognitive, motoric-vegetative, somatic, and interpersonal features of adolescent depression. Internal consistency ranges from .90 to .95, while test-retest reliabilities have been reported for 6-week (.80), 3-month (.79) and 1-year (.63) intervals (Reynolds, 1986). Internal consistency for the present dataset was .91. The total score from this measure was used to measure depressive symptoms, the dependent variable.

Self-Perception Profile for Adolescents

The Self-Perception Profile for Adolescents (SPPA: Harter, 1985) is a 30-item instrument designed to measure an adolescent's belief in his or her own self competencies. For purposes of this dataset, a modified version of the Self-Perception Profile was employed. Two subscales were removed from the original version. The first subscale removed was the Romantic Appeal subscale because the school district did not find it appropriate for the students in these grade levels to answer questions related to their romantic appeal. The second subscale removed was the Job Competence subscale because it was not likely that pre-adolescents in the 6th to 8th grade were employed. The items administered consisted of five specific domains designed to measure self-concept (scholastic competence, athletic competence, physical appearance, social acceptance, and behavioral conduct) as well as one global dimension of self-worth. In the original scale, items are coded on a 4-point scale. In this study, children were presented with two statements, one related to high perceived competence (coded a 3.5) and one related to low

perceived competence (coded a 1.5). The items were coded in this manner to approximate the original 1-4 rating scale. Internal consistency ratings vary according to subscales and have been reported by Harter (1985) as follows: scholastic competence (.80 to .85), athletic competence (.80 to .86), social competence (.75 to .80), physical appearance (.76 to .82), behavioral conduct (.71 to .77) and global self-worth (.78 to .84).

As noted, the original version of the SPPA allows participants to choose from one of four responses, with two parts to each question. In the modified version a forced choice format was used allowing for either low perceived competence or high perceived competence. Although psychometrically speaking utilizing a set of dichotomous items is not ideal, a pilot study conducted for this original study (Byrd, 2000) indicated that adolescents had a difficult time responding accurately to the four response options format. The issue of the format being conceptually demanding for some younger children has been raised in previous literature as well (Butler & Gasson, 2005). Internal consistency reported by Byrd (2000) was .87 for the overall measure. Internal consistency subscale ratings varied according to subscale and were reported for scholastic competence (.74), athletic competence (.66), physical appearance (.74), social acceptance (.70), behavioral conduct (.65) and global self-worth (.75). This measure was used to assess not only the level of global self-worth of the adolescents but also how they identify themselves in differing aspects of their self-concept.

III Results

i Subject Characteristics

Means, standard deviations, and correlations for all variables for the entire sample are shown in Table 1. Correlations are then further broken down for African Americans (see Table 2) and Caucasians separately (see Table 3). To rule out age differences, t-tests were conducted

for gender and racial group. While there were no significant differences in age between the genders, a significant difference did emerge for age with African American children having a slightly higher mean age. However, an effect size was calculated ($d = .215$) and the effect size was small (Cohen, 1988). T-tests were also conducted for each instrument (MASC, RADS, global self-worth) in order to compare between African American and Caucasian children (see Table 4). The t-tests failed to show significant differences between the groups for the MASC and global self-worth. However, there was a significant difference for the RADS with $t = -3.875$, $p < .000$, indicating that African American children reported significantly more depressive symptoms than their Caucasian counterparts.

Given the apparent differences in these relationships, a Fisher's r to z transformation was computed for the correlation between self-worth and the RADS for Caucasian children and the correlation between self-worth and the RADS for African American children. There was a significant difference between the two correlations, $z = -3.72$, $p < .001$, which will be commented upon further below.

ii Hypothesis 1A

It was hypothesized that anxiety symptoms would predict depressive symptoms for the sample as a whole. Specifically, it was hypothesized that as reported anxiety symptoms increased, depressive symptoms would increase as well. A hierarchical regression was performed in order to control for gender, age, and racial group in these preliminary analyses. Results revealed that after controlling for age, gender, and race, anxiety symptoms accounted for a significant amount of the variance in predicting depressive symptoms ($R^2 = .313$, $F(4,721) = 83.442$, $p < .001$). These results indicate that anxiety symptoms were associated with depressive symptoms, as predicted (Table 5).

iii Hypothesis 1B

It was hypothesized that self-worth would predict depressive symptoms for the sample as a whole. Specifically, it was hypothesized that as reported self-worth decreased, depressive symptoms would increase. A hierarchical regression was performed in order to control for gender, age, and racial group in these preliminary analyses. Results revealed that after controlling for gender, age, and race, low self-worth accounted for a significant amount of the variance in predicting depressive symptoms ($R^2 = .301$, $F(4,721) = 79.199$, $p < .001$). These results indicate that global self-worth was inversely related to depressive symptoms (Table 6), as predicted.

iv Hypothesis 2

It was hypothesized that self-worth would have a moderating effect on the relationship between anxiety symptoms and depressive symptoms. More specifically, it was predicted that the lower the self-worth, the stronger the relationship between anxiety symptoms and depressive symptoms. A hierarchical regression was conducted in order to investigate this hypothesis. Depressive symptoms were the dependent variable and both the anxiety symptoms and the self-worth scores were centered to reduce multicollinearity as recommended by Holmbeck (1997). Gender, age, and racial group were entered in Step 1 to control for the effects of those variables, based on findings in the literature. Anxiety symptoms were entered in Step 2, self-worth was entered in Step 3, and the interaction between anxiety symptoms and self-worth was entered in Step 4.

The results showed that a significant amount of variance was accounted for by the first three steps ($R^2 = .445$, $F(5,720) = 117.388$, $p < .001$). Inclusion of the fourth step (i.e., the interaction between anxiety symptoms and self-worth) did not result in a significant amount of

additional variance explained. These results indicate that self-worth did not have a moderating effect on the relationship between anxiety symptoms and depressive symptoms (Table 7).

v Hypothesis 3

It was hypothesized that race would have a moderating effect on the relationship between anxiety symptoms and depressive symptoms. Specifically, it was predicted that the relationships between anxiety and depression would be greater for African American children than Caucasian children. Depressive symptoms were the dependent variable and the anxiety symptoms were centered to reduce multicollinearity. Age and gender were entered in Step 1 to control for the effects of those variables, based on findings in the literature. Anxiety symptoms were entered in Step 2, racial group was entered in Step 3, and the interaction between anxiety symptoms and racial group was entered in Step 4.

The results showed that a significant amount of variance was accounted for by the first three steps ($R^2 = .316$, $F(4,421) = 83.442$, $p < .001$). Inclusion of the fourth step (i.e., the interaction between anxiety symptoms and racial group) did not result in additional variance explained. These results indicate that race did not have a moderating effect on the relationship between anxiety and depressive symptoms (Table 8).

vi Hypothesis 4

The current literature suggested a possible interaction between gender and race in the prediction of depressive symptoms, at least for African American youth. Thus, the final hypothesis investigated a three way interaction in order to expand upon extant findings. It was hypothesized that there would be a significant gender x racial group x anxiety interaction. A hierarchical regression was conducted and age was controlled. Each variable was entered (racial group, gender, anxiety symptoms) in the prediction of depression, as well as each two way

interaction (racial group x anxiety symptoms, anxiety symptoms x gender, racial group x gender) leading up to the three way interaction. A significant three way interaction was not supported indicating that there was no interaction between gender, racial group, and anxiety symptoms in the prediction of depressive symptoms (Table 9).

vii Exploratory Analyses

While there was no support for a significant three way interaction, there was a significant two way interaction between gender and racial group ($\beta = .306, t = 3.009, p = .003$). The interaction indicated that the prediction of depressive symptoms varied depending upon gender and racial group. Post hoc probing of the interaction showed that African American girls were significantly more likely to report depressive symptoms (see Graph 1), contrary to predictions.

Exploratory analyses were also conducted to examine the possible moderating effects of each facet of self-concept (i.e., scholastic competence, athletic competence, physical appearance, social acceptance, and behavioral conduct). While there were significant correlations between some of the subscales and the depressive symptoms (see Table 10) results indicated that none of the subscales significantly moderated the relationship between anxiety and depressive symptoms (see Table 11).

IV Discussion

i General Overview

The purpose of this study was to examine the effects of anxiety, self-worth, racial group and gender in the prediction of depressive symptoms. Self-worth and racial group were analyzed as potential moderators in the predictive relationship between anxiety symptoms and depressive symptoms. Correlational analyses revealed that gender, racial group, anxiety symptoms and self-worth were all significantly related to depressive symptoms in the expected direction. It was also

shown that African American children reported more depressive symptoms than Caucasian children. Analyses between the correlations revealed that the relationship between self-worth and depressive symptoms was significantly stronger for Caucasian children than African American children. This suggests that the relationship between self-worth and depressive symptoms may be more important to target and understand specifically in Caucasian children. It should also be noted that while a significant age difference was found between the African American sample and the Caucasian sample, the mean age difference was less than half of one year. This suggests that while the age difference is statistically significant, it may not be clinically significant. Specific to the sample, the reported depressive and anxiety scores were commensurate with what would be expected from a nonclinical sample of children (see March, 1997 and Reynolds, 1986).

Hierarchical regression analyses supported the first two hypotheses, both high anxiety symptoms and low self-worth significantly predicted depressive symptoms. These relationships align with previous research (e.g., Dallaire et al., 2008; Garaigordobil et al., 2008). However, the subsequent two hypotheses examining the moderating effects of self-worth and racial group on the relationship between anxiety and depression were not supported. A potential three way interaction between gender, racial group, and anxiety symptoms in the prediction of depressive symptoms was also not supported.

Exploratory analyses were conducted to further understand a significant two way interaction of gender and racial group that emerged during the analyses conducted for the three way interaction effects. As noted, the exploratory analyses revealed an interaction of gender and racial group in the prediction of depression. More precisely, African American girls were more likely to report depressive symptoms. These findings differ from previous studies where it was found that African American males were more likely to report depressive symptoms than African

American females (e.g., Kistner et al., 2003) or studies where no differences were reported between racial groups (e.g., Cole et al., 2001).

Exploratory analyses were also conducted to further analyze different facets of self-concept and their potential impact on the relationship between anxiety symptoms and depressive symptoms. While there were significant correlations between all of the subscales of self-concept and depression, none of the subscales emerged as significant moderators of the relationship between anxiety and depression.

ii Moderators

The current study showed that higher anxiety symptoms and lower self-worth were related to depressive symptoms. As previously mentioned, these findings align with previous research conducted in this area. Collectively, these findings are important for both assessment and the prevention and treatment of these problem areas. Anxiety symptoms and/or low self-worth may alert clinicians to be attentive for related depressive symptoms. It should be noted that temporal precedence was not established in this study and it plausible that depressive symptoms may develop first. However, the overarching message should highlight that there is a relationship between anxiety symptoms, self-worth, and depressive symptoms.

However, the level of self-worth did not moderate the relationship between anxiety and depression. While this finding fails to support some previous research (e.g., Metalsky, Joiner, Hardin & Abramson, 1993), it aligns with research conducted by others (e.g., Cole et al., 2001). One possibility for this finding is that self-concept plays a mediating role in the development of depression in childhood but a moderating role in adulthood. Research conducted by Cole and colleagues (see Cole & Turner, 1993; Tram & Cole, 2000) has focused on the cognitive-diathesis stress model in relation to self-concept as a mediator versus a moderator. Their results showed

that in children it may be the case that self-concept plays a mediating role, whereas in adulthood, self-concept has been shown to play a moderating role. One possible explanation for this may be the importance of developmental level and cognitive ability. Children need to reach a certain cognitive level before their self-concept moderates between relations between the two other constructs. Unfortunately in this study it was not feasible to conduct mediational analyses, given that the data were cross-sectional and temporal precedence could not be established.

Another possibility for the lack of findings is that self-perception emerges as a moderator when more specificity of relations is involved. For example, Hilsman and Garber (1995) found that academic self-concept served as a moderator between the stress of receiving a poor grade and the subsequent report of depressive symptoms, but other facets of self-concept did not. These possibilities offer fodder for future research, which will be discussed below.

Racial groups also did not emerge as a moderating variable on the relationship between anxiety and depression. There has been some research which found a significant interaction between gender and racial group. For example, Kistner et al. (2003) found African American males to report more depressive symptoms; however, this was not found in the present study. Furthermore, in the current research, it was found that being an African American female – not an African American male - was more likely to predict depressive symptoms. These findings are similar to previous studies which have found high correlations between being female and of a non-Caucasian race (e.g., Roberts & Sobhan, 1992; Wight, Sepulveda, & Aneshensel, 2004) in relation to depressive symptoms. However, few studies to date have specifically looked at female and race interactions in this area.

Another important confounding variable for the different findings between studies that warrants being mentioned is socioeconomic status. Emerging literature suggests that perhaps

differences attributed to racial groups may in fact be more related to socioeconomic status than to race differences (Adkins, Wang, Dupre, van der Oord, & Elder, 2009). While that is not to say that racial differences do not exist, there may be important socio-cultural contextual variables that should be taken into consideration with one another, as discussed below.

iii Limitations

There are several limitations to the study which must be taken into account. While the sample size was more than adequate and racially diverse, all of the children resided in one medium sized city in Southwest Virginia. This limits the generalizability of the findings to similar samples rather than a more diverse sample in terms of location, and perhaps more importantly, socioeconomic status and neighborhood characteristics. Because socioeconomic status of the families was not collected, it is not possible to fully understand the possible influence that it may have had on this sample.

It should also be noted that the age range was restricted to early adolescence. In addition to this specific age range, there were no measures of cognitive development or ability, which may also influence the findings. This may be especially true for this current study which was interested in the depressive symptoms of children, given that depression has a strong cognitive component (Beauchaine & Hinshaw, 2008).

It would also be prudent to keep in mind that all of the data were self-reported by the child. Research has shown that a multi-informant approach is especially important when working with children. However, this limitation does not invalidate a child's report, especially given the average age of the current sample. Research has suggested that even within a multi-informant method, a fair amount of weight should still be given to the child's report, especially for internalizing problems as both parents and teachers tend to underreport internalizing symptoms

in children (see Klein, Dougherty, & Olino, 2005). It is also important to bear in mind that when one is utilizing only self-report methods, it is of great importance to be aware of possible limitations to the measures themselves.

In order to further understand the findings associated with self-worth, an analysis of the data was conducted to more fully understand the measurement of self-worth itself. The range of scores was restricted to two, reflecting the dichotomous scoring using in this study (1.5, 3.5). The instrument itself was more restricted in scores than the original Self-Perception Profile developed by Harter (1988), because it was an adapted true-false version in order to enhance the ease of administration. Thus, it was not possible to truly determine the distribution of self-worth scores for the children. There are also additional methodological limitations that warrant attention, discussed below.

Unfortunately, given the cross-sectional nature of the data, it was not possible to conduct tests of mediation. In order to test for a possible relationship between anxiety symptoms and depressive symptoms, with self-worth as a mediator, it would have been necessary to have multiple time points. This would have been beneficial given that there is literature suggesting that perhaps self-worth serves as a moderator for adults and older adolescence, but as a mediator for younger children (Cole et al., 2001).

Regrettably, it was not possible to further explore the nuances in ethnicity differences within this sample. This was based on the fact that the children only self-reported their race, and were not given any measurements of ethnicity. Ethnicity itself is a complex area of research and there is still a great deal of discrepancy in how race, ethnicity, and culture are operationalized and how they are used. In order to appropriately analyze ethnicity, it would have been necessary to administer a measure that not only took into account various levels of ethnicity within the

African American children, but also a comparable measure for Caucasian children. An ethnicity measure would need to incorporate different aspects including race, culture, and acculturation. Unfortunately, a perusal of the current literature suggests that researchers often overlook the true definition of ethnicity and frame their studies as investigating ethnicity, when in actuality they are simply measuring self-reported racial group differences. The concept of ethnicity is inherently appealing, because it is a broader and richer construct than race alone. While it is too harsh to claim that researchers are drawing erroneous conclusions about ethnicity findings, it is important to highlight that race and ethnicity are not interchangeable constructs.

Although speculative, another possibility for the discrepant race findings between various studies may be the level of acculturation in each sample. Children who are more acculturated would exhibit more behaviors associated with the majority group than the minority group they are a part of (Landrine & Klonoff, 2004). Thus, acculturation is an important variable that should be incorporated into future research. For example, it may be that the differences between studies can be traced back to comparing samples where children are more acculturated in one study than children in another study. Acculturation is also embedded in a child's generation and how the family represents their own culture within the home. A measurement of acculturation would tap into a more encompassing way of measuring race and extending beyond biology. While the current study has limitations, it has been a stepping stone which has generated a multitude of ideas for possible future avenues of research.

iv Future directions

Future research should incorporate self-worth as a mediator in the relations between anxiety and depression in children, and do so using longitudinal designs. This research should further be extended to look at different developmental stages of the children. In order to explore

if there are developmental differences that self-worth may have on the relationship between anxiety and depression, one could follow a sample of children of varying ages over time. It would also be beneficial to study children at a younger age and to follow them into adolescence and on into adulthood. Widening the age of the sample would also allow for a more fine grained analysis of the possible developmental differences between children and adolescents. It may also allow for a disentanglement of self-worth as a possible moderator in one developmental stage, but a mediator in another.

In order to continue to understand the relationship between racial group, gender, and depressive symptoms, further research would also be enhanced by incorporating the role of parental socialization. Research has shown that children who have been prepared for racial bias by their parents are more likely to express depressive symptoms (McHale, Crouter, Kim, Burton, Davis, Dotterer, et al., 2006). Furthermore, it has been shown that parents are more likely to prepare their sons than their daughters for racial bias (Hughes, Rodriguez, Smith, Johnson, & Stevenson, 2006), however, others have argued that the findings for gender differences in socialization for racial bias are mixed (McHale et al., 2006). Still, this construct of parental socialization may be an important element in explaining why some studies find African American males to report higher depressive symptoms where as others find that African American females report higher depressive symptoms.

Additionally, it would be important to include a measure of family socioeconomic status in order to parse out racial differences from socioeconomic differences. As mentioned above, there is literature to support the notion that in our collective culture in the United States, racial grouping and socioeconomic status are frequently intertwined. There is a possibility that findings attributed to race, without taking into account socioeconomic status, may not be reliable or valid.

Future research should strive to include socioeconomic status when looking at race, ideally through the report of parent's income, profession, and level of education.

Future research may also want to move beyond the generality of self-worth, total depressive symptoms and total anxiety symptoms and focus on specific areas within these indices. It may be that specific subscales of self-concept moderate specific types of anxiety or depressive symptoms. For example, social self-competence may serve as a moderator between social anxiety and depressive symptoms. This relationship may be stronger for African Americans, given that some research has shown that living up to the expectations of others is an area of self-concept that has been found to be lower in African American than Caucasian children (Moneta et al., 2001). It would also be beneficial to look specifically at different clusters of symptoms that may theoretically be more pertinent for members of one racial group over another. For example, there is some research to suggest that African Americans report more physical symptoms related to depression than Caucasians (McLaughlin, Hilt, & Nolen-Hoeksema, 2007). Such possibilities await future inquiry.

Another way to address specificity may be to look at different samples of children. It would be beneficial to replicate this study with a clinical sample. It may be that the relationship between anxiety and depression is different depending upon whether certain clinical diagnoses are present. A clinical sample would include variables such as more extreme levels of symptomatology, as well as greater interference in daily life. Similarly, future research should look at possible symptomatology differences and severity between the racial groups.

In conclusion, while the hypotheses in this study were only partially supported, a few important themes did emerge. Primarily, anxiety and self-worth are related to depressive symptoms in pre-adolescent children. The clinical implications of the current study highlight the

importance of monitoring high anxiety symptoms and low self-worth, as those children may be at greater risk for related depressive symptoms. However, there was no interaction between anxiety and self-worth and depressive symptoms. Secondly, while racial status did not serve as a moderator to the relationship between anxiety and depressive symptoms, a significant relationship did emerge between gender, racial group, and depressive symptoms. While the finding that African American girls reported more depressive symptoms than African American boys or their Caucasian peers differs from previous studies, conceptually it aligns with the more prevalent finding in gender differences research where girls report more symptoms than boys. These overall findings serve as a starting point to enhance future research.

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Figure 1: Self-Perception

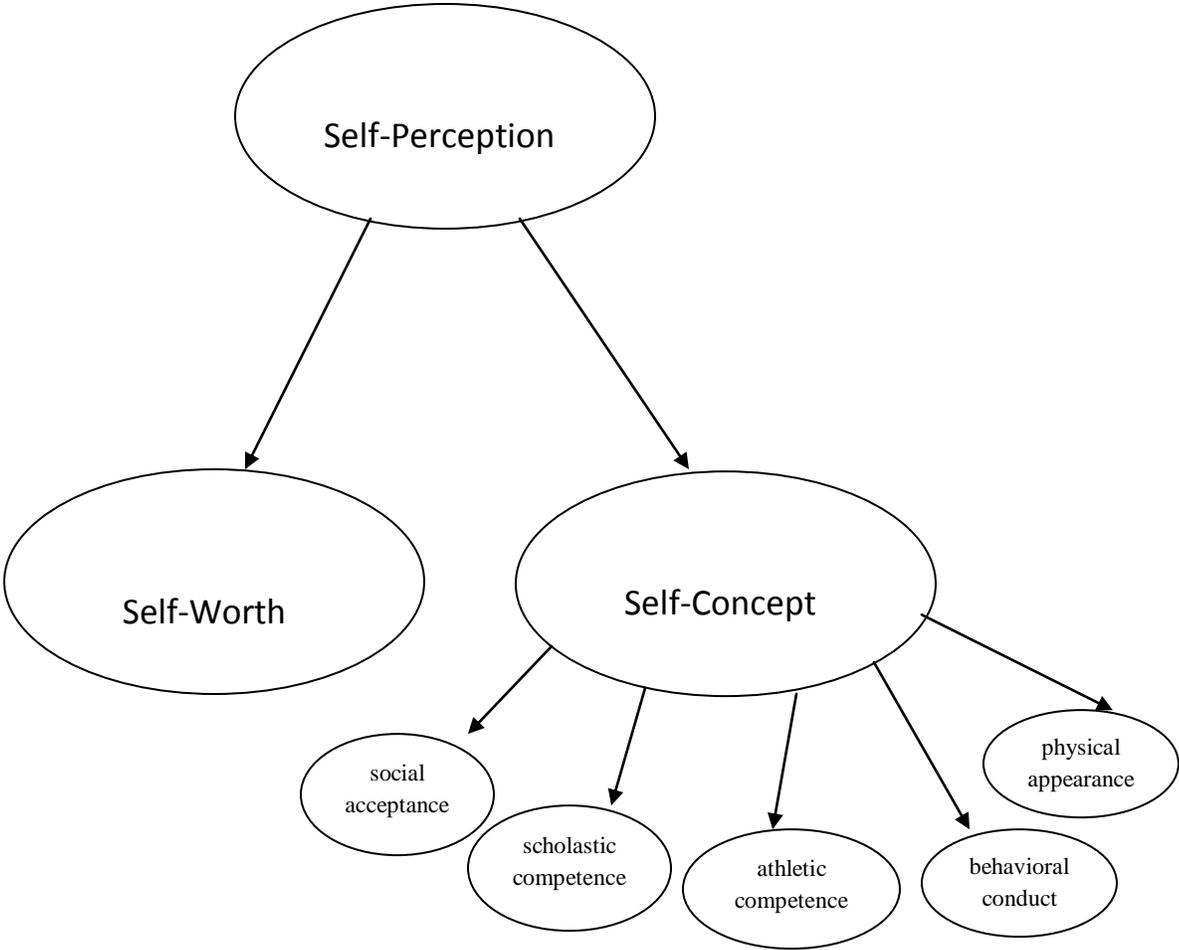


Figure 2: Hypothesis 1A

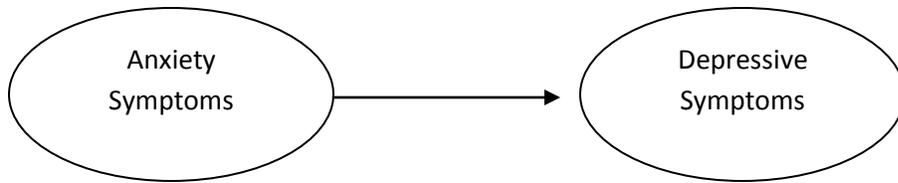


Figure 3: Hypothesis 1B

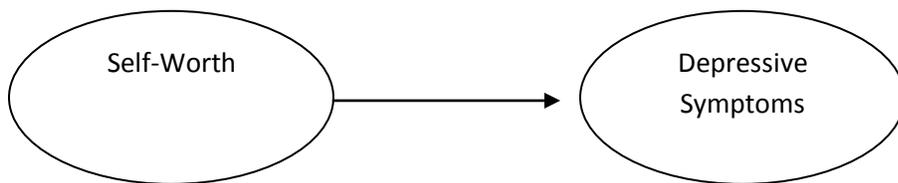


Figure 4: Hypothesis 2

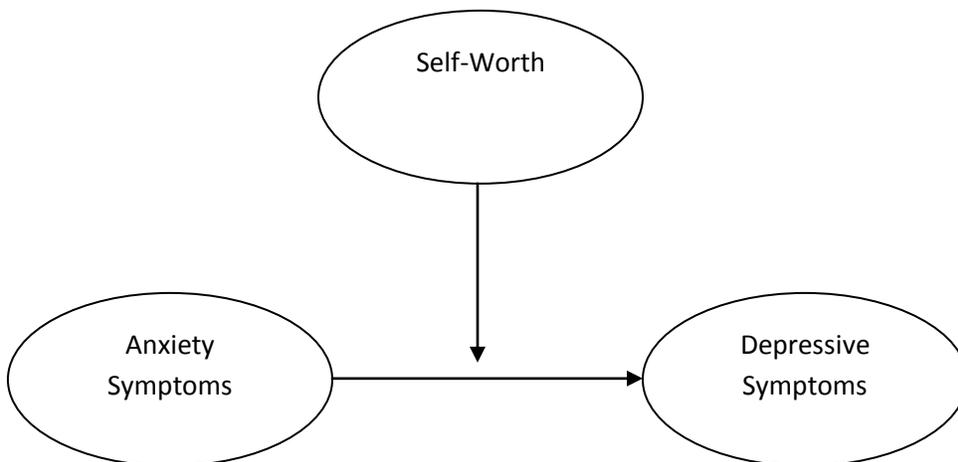


Figure 5: Hypothesis 3

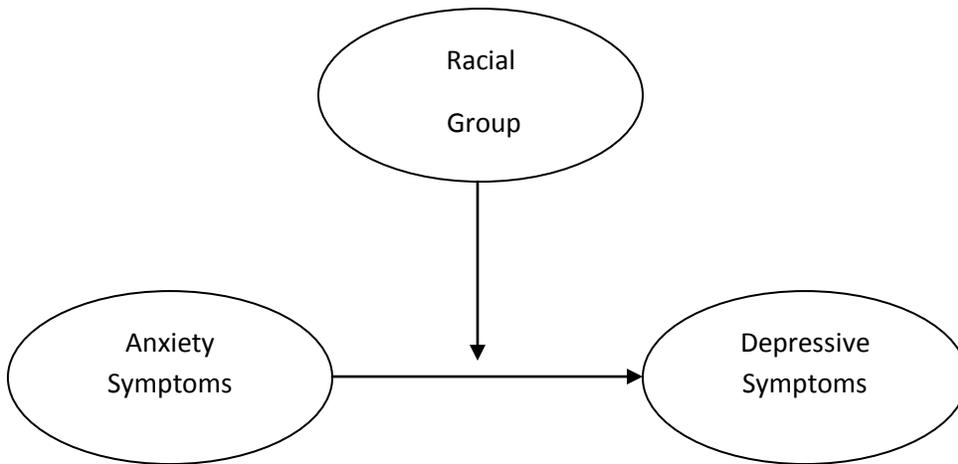


Figure 6: Hypothesis 4

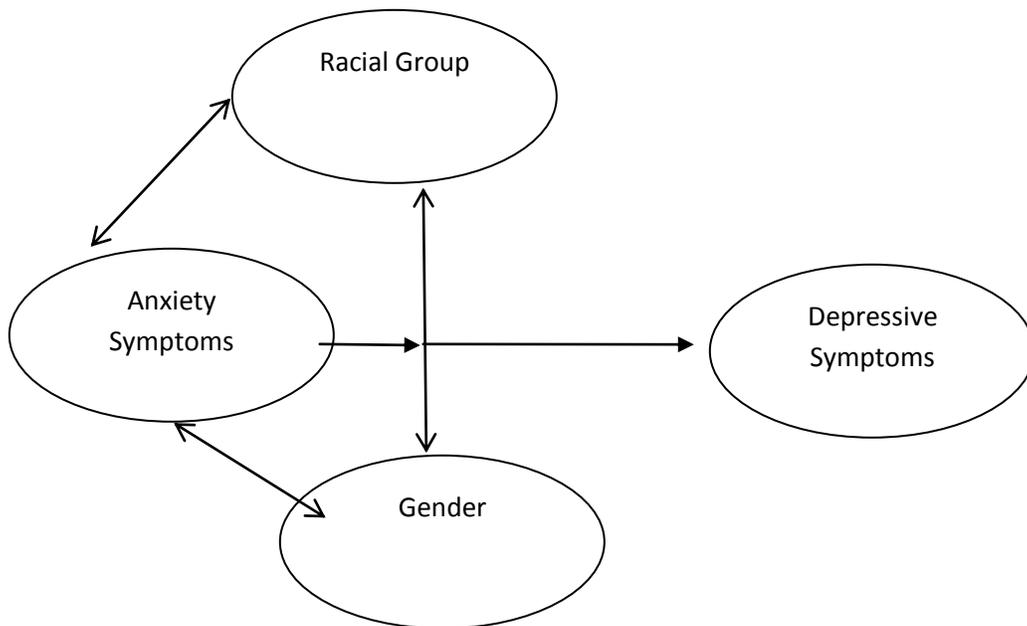


Table 1
Descriptives and correlations for entire sample

	1	2	3	4	5	6
Age	-	-.051	.098**	-.015	-.110**	.131**
Gender		-	.037	-.064	-.027	.129**
Racial Group			-	-.017	-.074*	.145**
MASC				-	-.296**	.501**
Global Self-Worth RADS					-	-.526**
Means	12.657	49.2%	34.7%	52.566	2.874	58.676
		Male	African- American			
Standard Deviations	1.014	-	-	10.085	.639	13.971
Minimum	11	-	-	28	1.50	30
Maximum	16	-	-	90	3.50	106
Range	5	-	-	62	2	76

n = 726, ** p < .01, *p < .05

Note: Raw scores are presented for RADS, MASC, and Self-Worth

Table 2
 Descriptives and correlations for African Americans only

	1	2	3	4	5
Age	-	-.087	-.058	-.109	.066
Gender		-	-.107	-.025	.246**
MASC			-	-.258**	.526**
Global Self-Worth RADS				-	-.366**
Means	12.7944	-	52.3226	2.808	61.492
Standard Deviations	1.015	-	9.768	.602	12.853

N = 248

** p < .01

Table 3
Descriptives and correlations for Caucasians only

	1	2	3	4	5
Age	-	-.038	-.009	-.101*	.143**
Gender		-	-.042	-.024	.070
MASC			-	-.316**	.501**
Global Self-Worth RADS				-	-.589**
Means	12.586	-	52.963	2.908	57.216
Standard Deviations	1.007	-	10.254	.656	14.314

N = 478

** p < .01, * p < .05

Table 4
Differences in means for African Americans and Caucasians

	N	Mean	Standard Deviation	Standard Error Of Mean	Significance
Age					.169
Female	368	12.606	1.001	.0522	
Male	358	12.710	1.026	.0542	
Age					.006
African America	253	12.806	1.015	.064	
Caucasian	479	12.589	1.008	.046	
MASC					.450
African American	254	52.098	9.904	.621	
Caucasian	479	52.687	10.244	.468	
RADS					.000
African American	254	61.287	12.870	.808	
Caucasian	479	57.259	14.330	.655	
Global Self-Worth					.060
African American	254	2.818	.601	.038	
Caucasian	479	2.909	.655	.030	

Table 5

Hierarchical regression of anxiety predicting depression

	B	Std. Error	β	t	p
Step 1					
Age	1.719	.502	.125	3.421	.001
Gender	3.663	1.014	.131	3.611	.000
Racial Group	3.777	1.073	.128	3.520	.000
Step 2					
Age	1.838	.427	.133	4.305	.000
Gender	4.586	.864	.164	5.311	.000
Racial Group	3.980	.912	.135	4.366	.000
MASC	.714	.043	.516	16.704	.000

Note: $R^2 = .052$ for Step 1; $R^2 = .316$ for Step 2; $\Delta R^2 = .052$ for Step 1; $\Delta R^2 = .265$ for Step 2.

Table 6

Hierarchical regression of global self-worth predicting depression

	B	Std. Error	β	t	p
Step 1					
Age	1.719	.502	.125	3.421	.001
Gender	3.663	1.014	.131	3.611	.000
Racial Group	3.777	1.073	.128	3.520	.000
Step 2					
Age	.983	.433	.071	2.271	.023
Gender	3.235	.869	.116	3.722	.000
Racial Group	2.843	.921	.097	3.087	.002
Global	-11.100	.685	-.508	-16.215	.000
Self-Worth					

Note: $R^2 = .052$ for Step 1; $R^2 = .305$ for Step 2; $\Delta R^2 = .052$ for Step 1; $\Delta R^2 = .253$ for Step 2.

Table 7
Global self-worth as a moderator

	B	Std. Error	β	t	p
Step 1					
Age	1.719	.502	.125	3.421	.001
Gender	3.663	1.014	.131	3.611	.000
Racial Group	3.777	1.073	.128	3.520	.000
Step 2					
Age	1.838	.427	.133	4.305	.000
Gender	4.586	.864	.164	5.311	.000
Racial Group	3.980	.912	.135	4.366	.000
MASC	.714	.043	.516	16.704	.000
Step 3					
Age	1.252	.386	.091	3.243	.001
Gender	4.053	.777	.145	5.218	.000
Racial Group	3.225	.821	.110	3.928	.000
MASC	.553	.040	.399	13.711	.000
Global Self-Worth	-8.431	.640	-.386	-13.167	.000
Step 4					
Age	1.258	.387	.091	3.253	.001
Gender	4.075	.780	.146	5.225	.000
Racial Group	3.208	.823	.109	3.897	.000
MASC	.555	.041	.401	13.582	.000
Global Self-Worth	-8.460	.646	-.387	-13.089	.000
MASC*Global	.021	.061	.010	.343	.731
Self-Worth					

Note: $R^2 = .052$ for Step 1; $R^2 = .316$ for Step 2; $R^2 = .449$ for Step 3; $R^2 = .449$ for Step 4; $\Delta R^2 = .052$ for Step 1; $\Delta R^2 = .265$ for Step 2; $\Delta R^2 = .133$ for Step 3; $\Delta R^2 = .000$ for Step 4.

Table 8
Race as a moderator

	B	Std. Error	β	t	p
Step 1					
Age	1.895	.504	.138	3.762	.000
Gender	3.812	1.021	.136	3.733	.000
Step 2					
Age	1.719	.502	.125	3.421	.001
Gender	3.663	1.014	.131	3.611	.000
Racial Group	3.777	1.073	.128	3.520	.000
Step 3					
Age	1.838	.427	.133	4.305	.000
Gender	4.586	.864	.164	5.311	.000
Racial Group	3.980	.912	.135	4.366	.000
MASC	.714	.043	.516	16.704	.000
Step 4					
Age	1.842	.427	.134	4.308	.000
Gender	4.593	.865	.164	5.313	.000
Racial Group	3.982	.912	.135	4.365	.000
MASC	.707	.052	.511	13.657	.000
MASC*Racial Group	.022	.092	.009	.236	.814

Note: $R^2 = .036$ for Step 1; $R^2 = .052$ for Step 2; $R^2 = .316$ for Step 3; $R^2 = .316$ for Step 4; $\Delta R^2 = .036$ for Step 1; $\Delta R^2 = .016$ for Step 2; $\Delta R^2 = .265$ for Step 3; $\Delta R^2 = .000$ for Step 4.

Table 9
Gender x racial group x anxiety symptoms

	B	Std. Error	β	t	p
Step 1					
Age	1.799	.508	.131	3.544	.000
Step 2					
Age	1.838	.427	.133	4.305	.000
Gender	4.586	.864	.164	5.311	.000
Racial Group	3.980	.912	.135	4.366	.000
MASC	.714	.043	.516	16.704	.000
Step 3					
Age	1.886	.426	.137	4.432	.000
Gender	2.742	1.056	.098	2.596	.010
Racial Group	-4.308	2.904	-.146	.099	.138
MASC	.598	.138	..432	4.329	.000
Racial Group* MASC	.039	.092	.016	.430	.668
Gender*MASC	.070	.086	.082	.824	.410
Gender* Racial Group	5.467	1.815	.307	3.012	.003
Step 4					
Age	1.883	.426	.137	4.418	.000
Gender	2.743	1.057	.098	2.596	.010
Racial Group	-4.287	2.907	-.146	-1.475	.141
MASC	.617	.163	.445	3.784	.000
Racial* MASC	-.024	.302	-.010	-.080	.937
Gender*MASC	.058	.103	.067	.559	.576
Gender* Racial Group	5.465	1.816	.306	3.009	.003
Gender*Racial Group*MASC	.041	.185	.028	.221	.826

Note: $R^2 = .036$ for Step 1; $R^2 = .052$ for Step 2; $R^2 = .316$ for Step 3; $R^2 = .316$ for Step 4; $\Delta R^2 = .036$ for Step 1; $\Delta R^2 = .016$ for Step 2; $\Delta R^2 = .265$ for Step 3; $\Delta R^2 = .000$ for Step 4.

Table 10

Correlations for self-concept subscales

	1	2	3	4	5	6	7
Social	-	.340**	.316**	.396**	.225**	-.414**	-.311**
Academic		-	.241**	.345**	.434**	-.413**	-.180**
Athletic			-	.360**	.125**	-.294**	-.188**
Appearance				-	.252**	-.396**	-.222**
Behavioral					-	-.385**	-.086**
RADS						-	.501**
MASC							-

** p < .01

Note: Raw scores are indicated for the Self-Perception scale, RADS, and MASC

Table 11

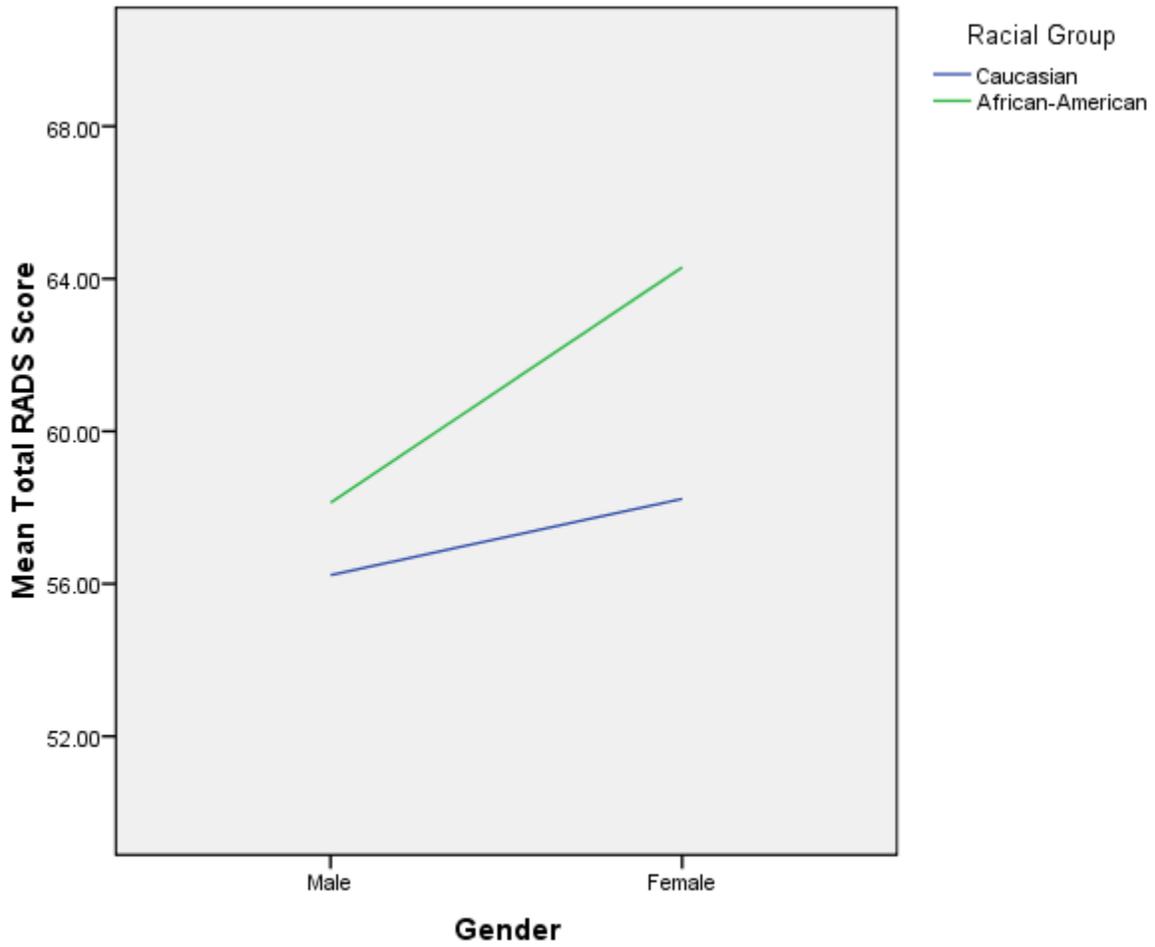
Self-concept subscales as moderators

	ΔR^2	B	Std. Error	β	t	p
Social	.222	-6.771	.769	-.276	-8.808	.000
MASC	.387	.588	.043	.424	13.621	.000
MASC x Social	.388	-.052	.066	-.024	-.788	.431
Academic	.451	-7.005	.670	-.311	-10.448	.000
MASC	.637	.638	.041	.460	15.691	.000
MASC x Academic	.638	.060	.066	.026	.905	.366
Athletic	.346	-3.417	.655	-.166	-5.219	.000
MASC	.584	.674	.044	.486	15.477	.000
MASC x Athletic	.584	.055	.064	.027	.872	.384
Appearance	.446	-5.411	.585	-.281	-9.244	.000
MASC	.624	.620	.042	.447	14.781	.000
MASC x Appearance	.624	-.036	.056	-.019	-.640	.522
Behavior	.430	-7.069	.628	-.331	-11.253	.000
MASC	.647	.675	.040	.488	16.986	.000
Behavior x MASC	.647	.013	.060	.006	.211	.833

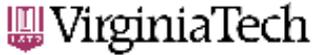
Note: Gender, race, and age were controlled for in each step.

Graph 1

Gender x racial group interaction



Appendix A: IRB Approval



Office of Research Compliance
Carmen T. Green, IRB Administrator
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540/231-4358 Fax 540/231-0959
e-mail ctgreen@vt.edu
www.irb.vt.edu
FWA00000572(expires 1/20/2010)
IRB # is IRB00000887

DATE: September 29, 2009

MEMORANDUM

TO: Thomas H. Ollendick
Maria Fraire

FROM: Carmen Green

SUBJECT: **IRB Exempt Approval:** "Anxiety and Depression: The Moderating Role of Self-Perception and Ethnicity", IRB # 09-886

I have reviewed your request to the IRB for exemption for the above referenced project. The research falls within the exempt status. Approval is granted effective as of September 29, 2009.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in the research protocol. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

cc: File
Department Reviewer: David W. Harrison