

ABSTRACT

Title of Thesis: THE IMPACT OF ETHNIC AND RACIAL
IDENTITY ON THE RELATION BETWEEN
AFRICAN AMERICAN TEST ANXIETY
AND LATER ACHIEVEMENT

Alyssa L. Daye, 2019

Thesis Directed By: Associate Professor Colleen O’Neal,
Department of Counseling, Higher Education,
and Special Education

The present study tests a protective factor which may mitigate the negative impact of test anxiety on academic outcomes. This study examines ethnic and racial identity as a moderator of the impact of test anxiety on grades and academic ability self-concept among African American adolescents. The study relies on the existing longitudinal Maryland Adolescent Development in Context Study (MADICS) dataset, a public use dataset collected from 1991-2000. The subsample consists of 533 African American youths in Wave 3 and 399 African American youths in Wave 4. The present study uses two waves of data from participants aged 13 to 18. This study employs self-reported questionnaires of test anxiety, ethnic and racial identity, grades, and academic ability self-concept. Moderation analyses are conducted to test ethnic and racial identity as a protective factor mitigating the impact of test anxiety on later grades and academic ability self-concept, while adjusting for gender, socioeconomic status, and age. Results indicate that ethnic and racial identity moderated the relation between test anxiety and GPA, such that the lower the level of ethnic and racial identity, the more protective it becomes. Discussion centers on potential causes for the unexpected trend in moderation.

THE IMPACT OF ETHNIC AND RACIAL IDENTITY ON THE RELATION
BETWEEN AFRICAN AMERICAN TEST ANXIETY AND LATER
ACHIEVEMENT

by

Alyssa L. Daye

Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Master of Arts
2019

Advisory Committee:

Associate Professor Colleen O'Neal, Chair

Assistant Professor Cixin Wang

Associate Professor Emeritus William Strein

© Copyright by
Alyssa L. Daye
2019

Acknowledgements

Alyssa L. Daye, Counseling, Higher Education, and Special Education, University of Maryland.

Thank you to all of the thoughtful and hardworking individuals in the Emotions, Equity, and Education Lab at the University of Maryland, College Park (Nicole Gosnell, Michal Boyers, Gabriella Estevez, Leyla Babaturk, Kristin Meyering, Shannon Martin, and Hayley Weinberg). Without your support and time in reading many drafts of this thesis, it would not have been possible. A special thank you to a former lab member, Antoinette Goldthrite, who provided ongoing support and guidance throughout the writing and data analysis process. Thank you to Colleen O’Neal for helping me refine my writing skills, while consistently pushing me to cross hurdles that she believed I could take on, even when I did not believe, myself. Thank you to Bill and Cixin for their enthusiastic contributions, and for providing me with edits throughout the thesis proposal process. Thank you to my parents, Darren and Tamara Daye, who have provided me love and support since the beginning of my academic pursuits. Lastly, but never least, thank you to my incredible husband, Kevin Durfee, who has been my emotional rock through not only the thesis writing process, but my graduate school journey as a whole. To all of the previously listed individuals, if there were a stronger word for “thank you,” I would certainly use that, but until that time, thank you from the bottom of my heart.

Table of Contents

| | |
|--|-----|
| Acknowledgements | ii |
| Table of Contents | iii |
| List of Tables | v |
| List of Figures | vi |
| Chapter 1: Introduction | 1 |
| Present Study | 2 |
| Chapter 2: Literature Review | 3 |
| Definition of Test Anxiety | 3 |
| Test Anxiety and Achievement | 4 |
| Test Anxiety and Achievement Among African American Students | 7 |
| Test Anxiety and Academic Ability Self-Concept | 9 |
| Theoretical Framework | 10 |
| Ethnic and Racial Identity as a Moderator | 12 |
| Ethnic and Racial Identity's Relation to Test Anxiety | 17 |
| Ethnic and Racial Identity and Achievement | 19 |
| Ethnic and Racial Identity and Academic Ability Self-Concept | 21 |
| Summary | 22 |
| Hypotheses | 23 |
| Chapter 3: Methods | 24 |
| MADICS | 24 |
| Participants | 24 |
| Procedures | 25 |
| Measures | 26 |
| Demographics | 26 |
| Test Anxiety | 26 |
| Ethnic and Racial Identity | 26 |
| Self-Report Grades | 27 |
| Academic Ability Self-Concept | 28 |
| Analysis | 28 |
| Chapter 4: Results | 30 |
| Descriptives | 30 |
| Data Formatting | 30 |
| Intercorrelations | 30 |
| Model Results | 31 |
| Model 1: GPA as Outcome Variable | 31 |
| Model 2: Academic Ability Self-Concept as Outcome Variable | 31 |
| Post Hoc Analyses | 32 |
| Chapter 5: Discussion | 34 |
| Test Anxiety and Academic Outcomes | 35 |
| Ethnic and Racial Identity | 37 |
| Ethnic and Racial Identity and Age | 37 |

| | |
|---|----|
| Ethnic and Racial Identity Correlates | 40 |
| Limitations | 43 |
| Conclusions and Implications | 45 |
| Appendices..... | 47 |
| References..... | 61 |

List of Tables

| | |
|--|----|
| Table 1. Year, Grade, Measures and Number of Participants for Each Wave..... | 47 |
| Table 2. Sample Demographics at Wave 3..... | 48 |
| Table 3. Descriptives and Cronbach's Alphas for all Variables in Moderation Model..... | 49 |
| Table 4. Intercorrelations Among Moderation Model Variables..... | 50 |
| Table 5. Unstandardized and Standardized Estimates for Model 1: GPA as Outcome..... | 51 |
| Table 6. Unstandardized and Standardized Estimates for Model 2: Academic Ability Self-Concept as Outcome..... | 52 |
| Table 7. Post-Hoc Analysis: Correlation of Ethnic and Racial Identity with Discrimination..... | 53 |

List of Figures

| | |
|---|----|
| <i>Figure 1.</i> Interaction of test anxiety and GPA, with ethnic and racial identity as a moderator..... | 54 |
| <i>Figure 2.</i> Expected interaction of test anxiety and academic outcomes, with ethnic and racial identity as a moderator..... | 55 |
| <i>Figure 3.</i> Hypothesized moderation model in which test anxiety's impact on academic achievement (grades and academic ability self-concept), is moderated by ethnic and racial identity..... | 56 |

Chapter 1: Introduction

Discrepancies in academic achievement between European American students and ethnic minority students have remained a considerable cause of concern for educators for several decades. This gap in achievement is evident as African American students have lower standardized test scores, receive lower grades than their European American counterparts, and are far more likely to drop out of high school (Jencks & Phillips, 1998; Planty et al., 2009). The National Center for Education Statistics states that the achievement gap has decreased over time and is smaller when accounting for socioeconomic status (Bohrnstedt et al., 2015). Though this is the case, the achievement gap still persists, and African American students generally score lower than European American students on standardized tests (Bohrnstedt et al., 2015). The achievement gap has a lasting impact as it can be present as early as kindergarten and continue into adulthood (Jencks & Phillips, 1998). Researchers have proposed many possible contributors to the achievement gap, from external factors like parent involvement (Jeynes, 2003) to teacher training (Johnson, 2009). The contributor of focus within this study is test anxiety; test anxiety is operationalized as a negative affective state, namely fear, aroused by evaluative situations like an examination or class test (Sarason, 1984; Yeo, Goh & Liem, 2016).

Research has consistently indicated that African American students experience elevated levels of test anxiety, as compared to European American students and students of other racial or ethnic groups (Hembree, 1988; Onwuegbuzie, 1999). Similarly, Putwain (2007) found that Black students had higher test anxiety scores than their White peers in the U.K. (Putwain, 2007). High test anxiety levels

have an inverse relationship with grade point average (Chappell et al., 2005) contributing to underachievement (Hembree, 1988). African American children who reported higher levels of test anxiety have been shown to be lower academic achievers compared to their non-test anxious peers (Turner, Beidel, Hughes & Turner, 1993). Test anxiety can have debilitating effects on student motivation, problem-solving, confidence, and academic performance (Putwain, 2008). As the achievement gap between African American students and their European American peers is a pervasive issue within U.S. school systems, it is imperative that researchers and educators identify protective factors in the relation between test anxiety and academic achievement for African American students. Ethnic and racial identity is a promising protective factor in the face of the negative effects of test anxiety on academic outcomes

Present Study

The present study aims to build upon the limited longitudinal research concerning African American adolescent test anxiety and achievement, and to test the novel potential role of ethnic and racial identity in this relation. The study design is guided by the framework of Steele's (1995) stereotype threat by examining test anxiety's impact on African American students' academic performance and academic ability self-concept. Using a longitudinal dataset, I propose testing (1) the relation of test anxiety (i.e., nervousness before or during school tests, fear of tests and fear of being called on in evaluative situations) to later grades and academic ability self-concept; and (2) ethnic and racial identity as a moderator of the relation between test anxiety and academic outcomes for African American adolescents.

Chapter 2: Literature Review

Definition of Test Anxiety

Test anxiety has been described as a negative affective state experienced within evaluative situations (Sarason, 1984; Yeo, Goh & Liem, 2016). The present study specifically operationalizes test anxiety as nervousness before or during school tests, fear of tests, and fear of being called on in classroom evaluative situations (see test anxiety items in Appendix B). The fear of evaluation that is central to test anxiety is comprised of two main components: an emotionality and a cognitive component (McDonald, 2001). The emotionality aspect has been operationalized by some as being comprised of autonomic arousal which may include sweaty palms, an increased heart rate, decrease in surface skin temperature, and increases in blood pressure (Osborne, 2007; Yeo et al., 2016). The cognitive component involves fear and worry of possible negative judgments made by others (Putwain et al., 2014). That is, test anxiety can evoke worry that parents, teachers, and peers may possibly view them in a negative light if their test performance does not meet expectations. When faced with test anxiety, the fear of evaluation and worry can be uncontrollable and linked to emotional discomfort and negative thoughts (McDonald, 2001). The thoughts of an anxious child who might expect to perform poorly on an evaluation, may be related to comparisons of themselves to other students (e.g., ‘Everyone is going to perform better than I will,’ or ‘They all think that I’m doing poorly.’). The negative thoughts can take place before or during the evaluative situation, which can have negative implications for performance (McDonald, 2001). Worrying within test anxiety draws

attention away from one's problem solving abilities and focuses it on negative beliefs about the test or one's readiness for it (Yeo et al., 2016). Differences in the amount and strength of these cognitive activities (i.e., thoughts, worry, etc.) are linked to the level of test anxiety experienced by the child (McDonald, 2001). The worrying experienced by test-anxious students is generally thought to be the component most directly linked to and responsible for lower assessment performance within this group (Hembree, 1988; Putwain, 2008).

Test Anxiety and Achievement

High scores on measures of test anxiety are linked to impaired academic performance (Putwain, 2008). In fact, test anxiety has been found to negatively impact academic performance as early as fourth grade (Ergene, 2003; Hembree, 1988). For some students, test anxiety may emerge early in childhood and decrease in intensity during middle elementary school years; for others, test anxiety may be a chronic condition (Turner, Beidel, Hughes & Turner, 1993). In addition, high test anxiety has been shown to have an inverse relationship with grade point average (Chapell et al., 2005). Not only are test-anxious children more likely to receive poor grades, but they are also more likely to repeat a grade and perform worse in evaluative situations than their peers (Carter, Williams & Silverman, 2008; Warren, Ollendick & King, 1996). Hembree (1988) conducted a meta-analytic study on correlates, causes, and effects of test anxiety with the analysis of 562 research articles including participants ranging from kindergarteners to students in graduate school. The meta-analysis found that test anxiety was related to worse academic performance. Also, test anxiety reduction through cognitive-behavioral treatments, test-wiseness

training (i.e., the ability to respond advantageously to multiple-choice items containing extraneous clues; Evans, 1984), instruction, and practice in test-taking, consistently improved academic performance and student GPA. Test anxiety was directly related to fears of negative evaluation, less effective study skills, and dislike of tests. The study also found that the worrying involved in the cognitive component of test anxiety has a stronger inverse relation with academic achievement than the emotionality component (e.g., arousal, sweating, etc.) (Cassady & Johnson, 2002; Hembree, 1988). This relationship may be due to the fact that worrying can interfere with working memory processes that are needed during examinations and tests (Owens, Stevenson, Norgate & Hadwin, 2008; Putwain et al., 2014). The operationalization of test anxiety in the present study directly relates to the cognitive component of test anxiety (fear and worry about performance in evaluative situations) as it measures nervousness before or during school tests, fear of tests, and fear of being called on in classroom evaluative situations.

Not only does test anxiety (and the worrying associated with it) negatively impact academic performance, within evaluative settings it also negatively influences a student's motivation to learn (Hancock, 2001) and their problem-solving confidence (Parkinson & Creswell, 2011) which both contribute to academic success (Yeo et al., 2016). Within postsecondary populations, test anxiety has been associated with the tendency to avoid coping with academic-related problems (Blankstein, Flett & Watson, 1992). That is, increases in student test anxiety relate to reductions in the ability to engage in problem-focused coping (i.e., behaviors designed to eliminate a problem). This is because students experiencing high levels test anxiety disengage

from the task within testing situations, and instead focus on self-evaluative concerns (Blankstein et al., 1992).

Another way in which test anxiety negatively impacts student academic achievement is through one's perceived ability to succeed academically. Parkinson and Creswell (2011) conducted a study aimed at gaining a deeper understanding of the association of problem-solving beliefs or skills with test anxiety in children (ages 8-11). Problem-solving skills were assessed using the Alternative Solutions Test (AST) in which children are given home- and school-based scenarios that include a problem, and they are asked to generate different solutions to these problems until they are no longer able to think of new solutions (Parkinson & Creswell, 2011). Their perceived problem-solving ability and style was assessed using the Problem-Solving Inventory (PSI) (Parkinson & Creswell, 2011). Prior to this study, similar studies conducted with adult populations revealed that compared to participants with low test anxiety, participants with high test anxiety reported lower problem-solving abilities (Parkinson & Creswell, 2011). Researchers found evidence to suggest that the effects of test anxiety in children are associated with poor problem-solving confidence despite the fact that the children did not exhibit a lack of abilities required to solve the problems at hand (Parkinson & Creswell, 2011; Yeo et al., 2016). The negative effects of test anxiety such as worrying and decreases in confidence can have debilitating effects on a student's academic performance and success (Parkinson & Creswell, 2011; Yeo et al., 2016).

Though most of the existing research on test anxiety has examined undergraduate and postsecondary students, the present study will include a younger,

African American adolescent population in the hopes of expanding the current literature to include youth and ethnic-specific samples. Specifically, this study will contribute by uncovering processes by which test anxiety relates to student achievement and academic self-concept among African American youth. Test anxiety may negatively influence student academic achievement and performance through many components but largely through its cognitive aspect which increases worrying, depletes academic confidence, and takes away from the mental processing tools required to perform well in school settings. The current study focuses on the impact of the cognitive aspect of test anxiety on academic outcomes.

Test Anxiety and Achievement Among African American Students

Test anxiety is a pervasive issue within many schools across the country. Not only do African American students experience the academic consequences of test anxiety reviewed in the previous section, but the prevalence of test anxiety is higher within this group than in European American students (Clawson, Firment & Trower, 1981; Hembree, 1988; Onwuegbuzie, 1999). In addition, studies focused on test anxiety for African American children and adolescents are few and far between. In a study conducted by Clawson, Firment and Trower (1981), evidence indicated that African American students (7th and 9th grade) reported higher levels of trait anxiety, state anxiety and test anxiety than their peers (Clawson et al., 1981). Within the sample of European American and African American students who had largely all been attending school together since elementary school and who shared similarities in educational backgrounds, the mean language and math performance was somewhat higher for the European American students (Clawson et al., 1981). Not only did

Clawson and colleagues (1981) conclude that the African American students experienced more test anxiety, they also speculated that the higher rates of test anxiety could be a likely cause for the disparities in mean language and math scores.

Turner, Beidel, Hughes and Turner (1993) aimed to gain a deeper understanding of the prevalence of test anxiety within African American students using a sample of African American participants aged 8 to 12 from three different schools. While utilizing self-report inventories as well as teacher ratings of social functioning, they determined that within their sample, as many as 41% reported high levels of test anxiety. In addition, the children who reported high test anxiety also reported significantly lower academic achievement scores than the African American children who did not experience high test anxiety (Turner et al., 1993). Considering the already pervasive achievement gap between African American students and their European American counterparts, the present study expands the literature by focusing on African American test anxiety and its impact on academic achievement. The present study aims to determine if ethnic and racial identity is a protective factor which may mitigate the effects of test anxiety on African American academic achievement and academic self-concept. Though there has not been an abundance of work aimed at understanding why exactly this group may be experiencing a higher prevalence of test anxiety, Steele (1997) would argue that the higher prevalence in this population could be related to African American students' experiences of stereotype threat. Stereotype threat, as reviewed in more detail below, has been defined as an experience through which one's performance is hindered due to fears that the performance may confirm stereotypes about one's group (Steele, 1997;

Wasserberg, 2014). For African Americans, the fear of confirming negative ethnic and racial stereotypes about their academic abilities, elicits an anxiety response that creates cognitive interference and undermines test performance (Carter, Williams & Silverman, 2008; Steele, 1997).

Test Anxiety and Academic Ability Self-Concept

The present study examines the impact that test anxiety may have on both grades and academic ability self-concept, with the two serving as academic outcome variables. Though the literature on the relation is limited, test anxiety has been linked to academic self-concept within two studies (Khalaila, 2015; Lohbeck, Nitkowski & Petermann, 2016). That is, high levels of test anxiety are related to lower levels of academic self-concept (Khalaila, 2015; Lohbeck, Nitkowski & Petermann, 2016).

Lohbeck and colleagues (2016) conducted a cross-sectional study to examine the relationship between academic self-concept, interest and test anxiety in elementary school children (aged 7-11). They found that there was a significant negative correlation between test anxiety and academic self-concept (Lohbeck, Nitkowski & Petermann, 2016). After conducting a multilevel regression analysis to determine the predictors of test anxiety they determined that academic self-concept was a significant correlate of test anxiety for the sample (Lohbeck, Nitkowski & Petermann, 2016). Though this study frames test anxiety as a product of low levels of academic self-concept (Lohbeck, Nitkowski & Petermann, 2016), reciprocal effects cannot be discounted (Ahmed, Minnaert, Kuyper & Van der Werf, 2012). For this reason, the present study examines test anxiety as a longitudinal, rather than cross-

sectional, predictor of low levels of academic self-concept for African American adolescents.

Ahmed, Minnaert, Kuyper and Van der Werf (2012) conducted a longitudinal study examining reciprocal relationships between self-concept and academic anxiety within mathematics (i.e., math anxiety and math self-concept) for seventh grade students. They state that much of the previous work on the subject has been based on the hypothesis that low academic self-concept precedes anxiety. Their hypothesis concerning reciprocal effects was confirmed as researchers found a dynamic relation between math anxiety and math self-concept (Ahmed et al., 2012). They concluded that math self-concept has a significant effect on math anxiety (Ahmed et al., 2012). Similarly, there was a significant effect of math anxiety on levels of math self-concept (Ahmed et al., 2012). From this study we may infer that given reciprocal effects between the two constructs, it is important to continue to conduct longitudinal research on test anxiety and achievement, rather than the largely cross-sectional research done thus far which cannot rule out reciprocal effects.

Theoretical Framework

The present study is conducted within the framework of Steele's (1995, 1997) stereotype threat to examine the impact of test anxiety on African American students' academic performance. One of the main concepts within this framework is the idea that test anxiety for African American students may be increased in stereotype threatening environments (Wasserberg, 2014) (e.g., the classroom environment). Stereotype threat is a social psychological process that has consistently been found to have a negative effect on student stress and test anxiety in ethnic groups in the US

(e.g., African American and Latina/o students; Blascovich, Spencer, Quinn, & Steele, 2001; Wasserberg, 2014) which in turn, impacts academic performance (Steele, 1997). The mechanism underlying the process of stereotype threat involves facing or perceiving judgment due to group stereotypes (Spencer, Steele & Quinn, 1999). That is, within situations in which stereotypes about one's group apply, members of the group can feel reduced to the stereotype. As group stereotypes are often known to the members of said groups, African American students may face the stereotype that their group is less likely to be as academically successful as their European American peers. Knowledge of these stereotypes can greatly and negatively impact academic performance through stereotype threat (Osborne, 2007). Even under the condition that an African American student and a European American student attend the same school or work in the same classroom, their subjective experiences within the classroom can look vastly dissimilar. The chance of being stereotyped within that environment and being seen as intellectually inferior could make the perception of the classroom more threatening, stressful (Cohen & Sherman, 2014) and anxiety-provoking (Wasserberg, 2014) for an African American student. Stereotype threat negatively impacts test anxiety for African American students within threatening academic environments, and test anxiety has been shown to negatively impair learning and academic achievement (Putwain, 2008).

Within Steele's framework, stereotype threat has been known to increase levels of test anxiety, negatively impact academic performance, and its impact on academic achievement has been moderated by ethnic and racial identity in a previous study (Davis III, Aronson, & Salinas, 2006). In other words, test anxiety may be a

byproduct of stereotype threat for African American students. The present study aims to test ethnic and racial identity as a moderator of the relation between test anxiety and academic achievement, as it has been found to moderate the relation between stereotype threat and achievement.

Ethnic and Racial Identity as a Moderator

Ethnic identity is the individual sense of being a member to an ethnic group which involves having knowledge of and a preference for the group; having a strong sense of belonging to the group; and involvement as a group member (Cokley & Chapman, 2008). Racial identity involves developing racial salience (i.e., race as a relevant part of one's self-concept); racial centrality (i.e., connection to one's racial identity); positive racial regard (i.e., positive feelings about one's racial group); and a racial ideology (i.e., opinions and attitudes related to racial membership) (Sellers, Smith, Shelton, Rowley & Chavous, 1998). Many researchers have recommended against making distinctions between ethnic identity and racial identity (Umaña-Taylor et al., 2014). Indeed, some researchers such as Umaña-Taylor and colleagues, choose to evaluate them as a metaconstruct: ethnic and racial identity (ERI) (Umaña-Taylor et al., 2014). Whether the words ethnic or racial are being used to describe an identity, it is usually based on the population being represented within the study (Umaña-Taylor et al., 2014). For example, ethnic identity measures are often used when the groups examined are considered ethnic groups (e.g., European American sample, African American sample etc.) and racial identity measures are often used within studies when the groups examined are considered racial groups (e.g., White, Black etc.); (Umaña-Taylor et al., 2014). Within these examples, Black refers to a

racial group (i.e., Black diaspora around the world) and African American refers to an ethnic group (i.e., Black people within America with a distinct African American culture). It is important to note though, that measures of ethnic and racial identity are not designed to represent either one of these exclusively (Umaña-Taylor et al., 2014). For this reason, there is a great deal of overlap within the research concerning these two constructs (Umaña-Taylor et al., 2014). Umaña-Taylor and colleagues (2014) make the claim that distinctions between ethnic and racial identity made by North American researchers may be considered antiquated and based on a narrow scope for the following reasons. New generations of youth may take on an identity perspective more global in nature (Hermans & Dimaggio, 2007; Umaña-Taylor et al., 2014). As an example, there are cultural features to being African American that are lost when an identity is considered strictly racial and not cultural or ethnic (Umaña-Taylor et al., 2014). For example, if identity is considered strictly based on race (e.g., Black), there may be features of the African American ethnic identity more specifically, that are not being captured and vice versa. For these reasons, information on both ethnic and racial identity will be examined in this literature review with a focus on their function as protective factors. For the purposes of this study, an ethnic/racial identity measure will be utilized. This study's ethnic and racial identity items incorporate both ethnicity and race (e.g. 'I have a close community of friends because of my race/ethnicity').

For many years, studies on child and adolescent ethnic identity have typically focused on the risks associated with being African American (Cross, 1991). Recent studies have begun to examine the role of ethnic and racial identity in promoting

positive psychological development (Wong et al., 2003). As societal ethnic devaluation can impact how a child or adolescent interacts with and relates to society, variables that can positively influence their sense of belonging may have the ability to function as a protective factor buffering against stigma-related threats (Goodenow & Grady, 1993; Wong et al., 2003). For instance, in the present study, ethnic and racial identity may moderate the relation between the stereotype threat-related variable of test anxiety and academic achievement for African American students. As stereotype threatening situations (i.e., those through which students are aware of the stigmas against their ethnic group) have the ability to influence their levels of academic anxiety (Gillen-O'Neel et al., 2011), it may be imperative to focus on bolstering one's identity as a protective factor. Studies have been conducted with regard to the benefits of ethnic identity serving as a psychological buffer against the effects of discrimination within African American child and adolescent populations (Cross, 1991; Wong et al., 2003).

Wong and colleagues (2003) conducted a study in order to examine whether or not ethnic identity served as a protective factor for African American students against the threats of discrimination. As with the present study, they utilized the MADICS dataset and used school record data and self-administered questionnaires (e.g., ethnic and racial identity) of African American adolescents. The results indicated that ethnic identity or connection to one's ethnic group can serve as a protective factor as it reduces the magnitude of the association between experiences of racial discrimination and declines in academic ability self-concept as well as grades (Wong et al., 2003). Students who exhibited higher levels of ethnic identity

maintained positive orientations toward school and academic achievement in the face of perceived discrimination (Wong et al., 2003). This outcome may have to do with the fact that families of adolescents of color help them build a connection to their heritage or identity. In doing so, parents often open the lines of communication surrounding topics like discrimination while at the same time, emphasizing the importance of academic achievement (Branch & Newcombe, 1986; Wong et al., 2003). This study highlights one way in which ethnic identity can potentially facilitate the healthy development of African American adolescents in the face of threatening circumstances (Wong et al., 2003). The present study builds upon the research conducted by Wong and colleagues (2003), as ethnic and racial identity is examined in the present study for its impact on the relation between test anxiety within evaluative classroom environments and academic outcomes.

Though many studies have examined ethnic and racial identity's buffering effects, a couple of meta-analytic studies have concluded mixed results with regard to group identification's role in buffering the psychological impact that discrimination has on psychological well-being (Pascoe & Smart Richman, 2009; Schmitt, Branscombe, Postmes & Garcia, 2014). Pascoe and Richman (2009) conducted their analysis examining studies that used group identification as a moderator of the relation between perceived discrimination and mental health. This meta-analysis was not specifically conducted with an adolescent population. It also used group identification as the moderator which included racial group, gender group and sexual orientation group identification (Pascoe & Richman, 2009). Schmitt and colleagues conducted a meta-analytic study (2014) which also examined group identification as

the moderator of the relation between discrimination and well-being. As was the case with the previous study, this meta-analysis also examined group identification, more generally, as opposed to ethnic and racial identity, more specifically, as is the case with the present study. Schmitt and colleagues (2014) concluded that although many tests of group identification as a moderator were insignificant, those studies that did find significant results saw that group identification served as a buffer rather than an exacerbating variable.

Though some studies (Pascoe & Smart Richman, 2009; Schmitt, Branscombe, Postmes & Garcia, 2014) have had mixed findings when evaluating the buffering effects of group identification generally, other studies have found ethnic and racially identity to serve as a buffering effect to discrimination's negative impact on African Americans. Davis III's study (2006) examined the protective role of racial identity in the relation between stereotype threat and test performance (i.e., GRE verbal) within an African American undergraduate population. Black undergraduate students were separated into three stereotype threat conditions: low, medium, and high stereotype threat (Davis III et al., 2006). The low threat participants were told that the experimenter was interested in understanding how students respond when confronted with a challenging problem-solving exercise (Davis III et al., 2006). Participants within the medium and high threat groups were told the task was a measure of their verbal ability or verbal intelligence (Davis III et al., 2006). Participants in the high threat condition were separately instructed to complete the Multigroup Ethnic Identity Measure (MEIM) (i.e., a racial identity scale) immediately prior to taking the GRE verbal test (Davis III et al., 2006). This establishes high stereotype threat conditions

because simply bubbling in one's race evokes stereotype threat for African American students (Steele & Aronson, 1995). Results indicated that within low stereotype threat environments, racial identity moderated its impact on African American students' GRE performance (Davis III et al., 2006). That is, within certain stereotype threatening conditions those students who held a more secure sense of connectedness to their racial group and identity accurately solved more GRE verbal items than those who did not hold those same racial attitudes (Davis III et al., 2006). Ethnic and racial identity has potential as a protective factor given that it has been found to buffer many different variables that have shown to negatively impact African American students (Davis III et al., 2006; Wong et al., 2003), academic achievement and academic achievement-related variables (e.g., academic ability self-concept).

Ethnic and Racial Identity's Relation to Test Anxiety

Though there is limited research concerning the link between students' ethnic and racial identity and test anxiety specifically, there have been studies concerning the relation between anxiety and ethnic or racial identity. Mandara and colleagues (2009) examined whether increases in racial identity and self-esteem would correlate with reductions in anxiety symptoms within their sample of 259 sixth-grade African American students from six public schools in Chicago (Mandara, Gaylord-Harden, Richards & Ragsdale, 2009). While utilizing self-report inventories (STAI-C & MEIM), they found that an increase in racial identity between the seventh and eighth grades was associated with a significant decrease in female anxiety symptoms within the same period (Mandara et al., 2009). That is, changes in racial identity levels are associated with changes in anxiety levels (Mandara et al., 2009). This may indicate

ethnic and racial identity as a possible protective factor against the effects that anxiety can have on student success. Evidence of ethnic identity's positive influence on anxiety levels for African American middle school students suggest that it may serve as a promising moderator for this population when experiencing anxiety related to an academic testing environment.

Serrano-Villar and Calzada (2016) highlight the effects that ethnic identity can have within school settings. It was concluded that within a sample of Latino students (pre-k and kindergarten) ethnic identity is associated with increases in adaptive behavior not only at home but at school as well. Higher ethnic identity levels were associated with fewer internalizing problems, including anxiety, within the school setting (Serrano-Villar & Calzada, 2016). In this way it may be possible for ethnic and racial identity to impact test anxiety for African American adolescents within evaluative school settings.

Though there is limited research concerning the connection between ethnic and racial identity and test anxiety, there are relations of ethnic and racial identity with stereotype threat (which can lead to increases in test anxiety). As stated previously, Davis III and colleagues (2006) found that racial identity successfully moderated the relation between stereotype threatening environments and performance on an intellectual task. That is, racial identity mitigated the negative impact that stereotype threatening environments had on African American students' achievement (Davis III et al., 2006). The researchers theorized that this was due to individuals with high levels of racial identity being less likely to believe negative stereotypes about their group – and thus, less likely to be impacted by them (Davis III et al., 2006). As

stereotype threat's effects are impacted by ethnic and racial identity, it may be possible that ethnic and racial identity can impact the effects of one of its byproducts as well (i.e., test anxiety). The present study aims to fill the gap by examining ethnic identity as a moderator in the relation between African American adolescent test anxiety and achievement.

Ethnic and Racial Identity and Achievement

Holding positive beliefs about society's views of Black people as well as high racial centrality and strong positive regard (two of the four aspects that make up racial identity – racial salience, racial centrality, positive racial regard, and racial ideology), has been related to positive academic beliefs among African American adolescents (Chavous, Bernat, Schmeelk-Cone, Caldwell, Kohn-Wood & Zimmerman, 2003). Though some studies have suggested a more indirect impact of ethnic and racial identity on academic achievement (e.g., Cokley & Chapman, 2008), other researchers have found a direct relationship of ethnic and racial identity with academic achievement (Oyserman, 2008). With a sample of predominantly African American and Latina/o eighth grade students (98 African American students and 115 Latina/o students), Oyserman (2008) found that high ethnic-racial identity scores were associated with higher grade point averages and increased school engagement (Oyserman, 2008). Ethnic and racial identity may be considered an integral, positive component of academic achievement for ethnic minority students. Given its positive role in achievement, the present study aims to test its protective effects for African American adolescent students.

African American students can vary in their degree of ethnic and racial identification, as well as their perceptions of self with regard to the racial group as a whole (Chavous et al., 2003). With a sample of 606 African American youths (12th grade at Wave 1, and 2 years out of high school at Wave 2), Chavous and colleagues (2003) conducted a study to investigate how youth's beliefs about race influence their academic beliefs and behaviors. They found that for African American adolescents, reporting high levels of racial centrality, private regard (i.e., group pride), and public regard (i.e., positive beliefs concerning how society sees African Americans) is related to positive academic beliefs (e.g., school attachment, school relevance, school efficacy and school importance) (Chavous et al., 2003). These outcomes reflected a promotive view of racial and ethnic identity on the academic achievement of ethnic and racial minority students (Chavous et al., 2003). Though there are many factors that contribute to the academic success of African American students, the present study attempts to understand how a student's ethnic and racial identity moderates the negative effects of test anxiety in order to facilitate academic success.

Ethnic identity has been examined in many studies, as a protective factor with samples of ethnic minority students in an effort to better understand their abilities to overcome adversity with regard to academic achievement among many other variables (Davis III et al., 2006; Ong, Phinney & Dennis, 2006; Wong et al., 2003). Ong and colleagues (2006) found that Latina/o college students who reported higher levels of ethnic identity and family interdependence exhibited greater academic achievement, and ethnic identity served as a moderator of the relation between SES and academic achievement (Ong et al., 2006). Academic outcomes such as these

suggest that ethnic and racial identity may serve as a moderator of the relation between adversity or times of challenge (e.g., test anxiety) and academic achievement.

Ethnic and Racial Identity and Academic Ability Self-Concept

Ethnic and racial identity will also be examined as a moderator of the relation between test anxiety and academic ability self-concept, and there is some evidence for a relation of ethnic and racial identity with academic self-concept (Cokley & Chapman, 2008). Cokely and Chapman (2008) conducted a study to examine the roles of ethnic identity and academic self-concept in African American college students' academic achievement. They found that ethnic identity was indirectly linked to achievement (i.e., GPA) through its relationship with academic self-concept for college students attending a southern historically black college/university (i.e., HBCU) (Cokley & Chapman, 2008). That is, students with more positive ethnic identities had higher academic self-concepts which were in turn predictive of higher grades (Cokley & Chapman, 2008). Though this study was conducted with a college sample, the present study will expand these findings by examining ethnic and racial identity's relation to academic self-concept for African American adolescents.

Evidence would also suggest a relation between a stage of racial identity development and academic self-concept (Awad, 2007). Awad (2007) conducted a study concerning the role of racial identity stages, academic self-concept and self-esteem in the prediction of academic outcomes for African American college students. They found a link between one of the racial identity stages and self-concept (Awad, 2007). More specifically the internalization multiculturalist stage of racial

identity which is defined as being connected to diverse ethnic groups in addition to one's own, was found to be positively related to academic self-concept within a sample of African American college students (Awad, 2007). Though there is quite a bit of preexisting research concerning racial identity and African American self-concept, the present study contributes information to the relation between ethnic and racial identity and academic self-concept within a younger, adolescent sample as there are not many studies conducted with this population.

Summary

The present study makes a contribution by identifying protective factors mitigating the negative impact of test anxiety on the later academic outcomes for African American adolescents. Research has indicated that African American students may experience elevated levels of test anxiety compared to students of other racial/ethnic groups (Hembree, 1988; Onwuegbuzie, 1999), which contributes to the achievement gap between African American adolescents and their European American peers. High ethnic and racial identity levels are associated with higher grade point averages and increased school engagement (Oyserman, 2008). Ethnic and racial identity has buffered many different variables that have shown to negatively impact African American students (Davis III et al., 2006; Wong et al., 2003), academic achievement and academic achievement-related variables. For these reasons ethnic and racial identity was tested as a moderator of the impact of test anxiety on later grades and academic ability self-concept for African American adolescents.

Hypotheses

The present study examines ethnic identity as a moderator of the relationship between African American students' test anxiety and their academic outcomes. I hypothesize that (a) test anxiety has a negative effect on academic outcomes of grades and academic ability self-concept for African American adolescents and that (b) this effect is dependent on level of ethnic and racial group identification. (Figure 3)

Chapter 3: Methods

MADICS

The present study utilizes data from the Maryland Adolescent Development in Context Study (MADICS, 1991-2000) conducted by Eccles and colleagues. The purpose of the MADICS longitudinal study was to examine environmental influences on individual behavior and its contributions to successful pathways through adolescence. The study oversampled African American students in Prince George's County, which has a large African American community and a wide range of SES.

In the fall of 1991, researchers contacted 1,700 adolescents and their families to participate in Wave 1 of the MADICS study. At this time the adolescents were in the 7th grade and attending junior high school. The MADICS study collected data at six differing time points, but the present study utilizes data from Waves 3 and 4 (Table 1). Wave 3 begins during the adolescents' 8th grade year and consists of in-home surveys and telephone interviews with primary caregivers. Information collected at this time point focuses on race and ethnicity constructs. The final wave used within this study is Wave 4 which took place during the adolescents' 11th grade year via face-to-face interviews and a self-administered questionnaire. The constructs focused on relationships in high school, studying, values etc.

Participants

All of the participants who took part in the study, lived in Prince George's County, Maryland during the time of data collection and came from a range of ecological settings including: low income and high-risk urban neighborhoods, middle class suburban neighborhoods, as well as rural neighborhoods (Table 2). The overall

sample is also representative of differing socioeconomic statuses with income normally distributed around a mean of \$45,000-\$49,000 (and a range of \$5,000-\$75,000). Regarding this study, 533 African American adolescents participated in data collection in Wave 3 (8th grade) and 399 African American adolescents participated at Wave 4 (11th grade) (Table 1). The percent of female participants was 49 percent at Wave 3 (266 males, 263 females) and 51 percent at Wave 4 (191 males, 207 females).

Procedures

In 1990, Prince George's county had 25 middle schools, with 23 of the schools agreeing to participate in the study. MADICS researchers, and researchers utilizing the MADICS data set, have not specified the number of public and private schools included in the data set. Researchers invited all entering 7th grade students from the 23 schools to participate. In the fall of 1991, 1,700 adolescents and their families from schools within Prince George's county, were contacted and recruited via letters sent home with the students. The letters asked for parental permission for their child and his/her parent and older sibling to participate in the longitudinal study. The present study utilizes data at Wave 3 and Wave 4 (Table 1). During the adolescents' 8th grade year (Wave 3) and 11th grade year (Wave 4), the adolescent participants were individually interviewed at home for 1 hour each, and each filled out a 45-minute self-administered questionnaire. When it was possible, researchers matched the race of the interviewer with the race of the primary caregiver. The present study utilized youth self-report data for all constructs tested.

Measures

Demographics

The present study included participant demographics on age, gender, and SES (Table 2).

Test Anxiety

Test anxiety was assessed using the 6-item Test Anxiety scale that was created by Maryland Adolescents in Context Study (MADICS) researchers (see Appendix B). The test anxiety scale measures nervousness before or during tests and fear of tests (e.g., How nervous do you get BEFORE you take tests at school?; How much do tests at school scare you?) using a 7-point frequency scale (1 = *not at all nervous*; 2, 3, and 4 = *somewhat nervous*; 5, 6, and 7 = *extremely nervous*). It also measures fear of classroom evaluative situations (e.g., You get nervous if you have to explain your answer in class in front of the other students; You get nervous if you have to speak out in class) using a 4-point scale (1 = *not at all true of you*; 2 = *a little true of you*; 3 = *somewhat true of you*; 4 = *very true of you*). The MADICS researchers report a Cronbach's $\alpha = .83$ at Wave 3. Within the present study utilizing only African American participants at Wave 3, the test anxiety scale has a Cronbach's $\alpha = .82$.

Ethnic and Racial Identity

Ethnic and racial identity in African American participants will be examined using a 4-item scale created by MADICS researchers originally titled, Connection to Ethnic Heritage (MADICS reported Cronbach's alpha of $\alpha = .72$ at Wave 3). Within the present study utilizing only African American participants at Wave 3, the ethnic

and racial identity scale has a Cronbach's $\alpha = .68$. The ethnic and racial identity scale measures community and ethnicity/race connection, perception of having a rich heritage because of one's ethnicity/race, whether or not the participants have meaningful traditions as a result of their ethnicity/race, and group support because of ethnicity/race (e.g., I have a close community of friends because of my race/ethnicity). The items used a 5-point scale Likert (1 = *not at all true*; 2 = *a little true of me*; 3 = *somewhat true of me*; 4 = *very true of me*; 5 = *extremely true of me*). The measure has been used as an ethnic identity measure within the study conducted by Wong and colleagues (2003) and it also draws on concepts from racial identity measures. More specifically, this measure corresponds to the racial centrality component of most racial identity measures including the multidimensional model of racial identity, as reviewed in the literature review above (MMRI; Sellers et al., 1998). After consulting with an expert in racial identity research at the University of Maryland, College Park, it was determined that this measure may serve as a culturally relevant measure of ethnic and racial identity (K. Slay, Ph.D., personal communication, April 1, 2018).

Self-Report Grades

At Wave 4, the MADICS dataset includes a 5-item question asking the participants: "On your 1st semester report card from 11th grade," (a) how many A's did you get? (b) how many B's did you get? (c) how many C's did you get? (d) how many D's did you get? and (e) how many F's did you get?

Academic Ability Self-Concept

Academic ability self-concept in African American participants was examined using a 6-item scale created by MADICS researchers originally titled, Youth Self-Concept of Academic Skills (MADICS reported Cronbach's $\alpha = .84$). Within the present study utilizing only African American participants at Wave 4, the academic ability self-concept scale has a Cronbach's $\alpha = .84$. The academic self-concept scale measures the participants' perceptions of their skills in math, their skills in other subjects, how they believe they compare to other kids their age in math and other subjects, as well as how they expect to perform the next year in math and other school subjects (e.g., compared to other kids your age how well do you do in math?). The items used a 7-point scale (1 = *much worse than other kids*; 7 = *much better than other kids*).

Analysis

Descriptive analysis (means, standard deviations, and ranges) of all variables were assessed to determine if they present normal distributions. Intercorrelations among the variables were conducted to identify relationships between them. To examine moderation, the present study employed structural equation modeling (SEM) using Mplus version 8.0 to test the present model.

Question 1: "Does test anxiety negatively impact academic achievement for African American adolescents?" and Question 2: "Does test anxiety negatively impact academic self-concept for African American adolescents?" To address question 1, I conducted a path analysis in Mplus using Wave 3 test anxiety and Wave

4 GPA as an outcome. To address the question 2, I also conducted a path analysis in Mplus using test anxiety and Wave 4 academic self-concept as an outcome.

Question 3: “Does ethnic and racial identity moderate the relation between test anxiety and achievement for African American adolescents?” and Question 4: “Does ethnic and racial identity moderate the relation between test anxiety and academic self-concept for African American adolescents?” To answer these

questions, I tested the factor of ethnic and racial identity as a moderator of the relation between Wave 3 test anxiety and Wave 4 GPA and the relation between Wave 3 test anxiety and Wave 4 academic self-concept. To do so, I added the interaction of test anxiety and ethnic/racial identity to the path model with test anxiety as a predictor of academic outcomes, along with including the main effect of ethnic/racial identity.

To account for missing data, full information maximum likelihood (FIML) was used. The present study did not test direct effects of ethnic and racial identity on the academic outcomes of GPA and academic ability self-concept. Gender, SES, and age were the demographic controls for the model. Gender and SES served as control variables, as research has indicated that both can impact the variance of test anxiety scores (Putwain, 2007). Additionally, age was controlled for in the present study, as ethnic and racial identity can vary as a result of age (Yip, Gee, & Takeuchi, 2008). Path indices were used to evaluate model fit (i.e., Root Mean Square Error of Approximation, Standardized Root Mean Squared Residual, and Comparative). To determine model fit, I used the recommended RMSEA cutoff of less than 0.06, SRMR cutoff of less than 0.08, and a CFI cutoff greater than 0.95.

Chapter 4: Results

Descriptives

Means, ranges, standard deviations, and alpha reliability coefficients of all studied variables can be found in Table 3. The mean test anxiety rating was slightly higher than expected as it was 2.44 within a 4-point scale. The ethnic and racial identity scale displayed a high standard deviation of .89. The mean academic ability self-concept rating was higher than expected as it was 5.22 within a 7-point scale.

Correlations

As half of the test anxiety scale items included a 7-point scale while the other half of the items included a 4-point scale, the 7-point items were recoded to a 4-point scale for uniformity and interpretation purposes (Table 3). The individual participant grades were calculated into an overall GPA variable used within the first model.

Bivariate correlations were computed for all variables used in this study (Table 4). The correlation between the two outcome variables of GPA and academic ability self-concept ($r = .37$) was statistically significant, as expected. Though the moderator of ethnic and racial identity was not significantly correlated with the predictor variable of test anxiety, it was significantly correlated with gender ($r = .09$), SES ($r = .19$), and age ($r = -.16$), as expected. Relations of the predictor variable of test anxiety with the outcome variables of GPA ($r = .00$) and academic ability self-concept ($r = -.10$) were not statistically significant.

Model Results

Predictor variables (i.e., test anxiety and ethnic and racial identity) were centered prior to moderation analysis in order to reduce non-essential multicollinearity and to improve interpretation of lower order terms in the model (Fairchild & McQuillin, 2010).

Model 1: GPA as Outcome Variable

Results of model 1 (i.e., GPA as outcome variable) tested in this paper can be found in Table 5. The graph depicting the model 1 interaction can be found in Figure 1. The model examined ethnic and racial identity at Wave 3 as a moderator between Wave 3 test anxiety and Wave 4 GPA. The direct effect of test anxiety on GPA was not statically significant. Within the moderation model, there was a significant interaction test anxiety with ethnic and racial identity influencing the outcome of GPA. Within this model, the lower ethnic and racial identity levels were, the more protective it becomes as indicated through the continuous negative interaction and Figure 1. This interaction was unexpected, the present study expected a negative relation between test anxiety and academic outcomes for those with low levels of ethnic and racial identity, and no relation for those with high levels of ethnic and racial identity. A depiction of the anticipated interaction can be found in Figure 2.

Model 2: Academic Ability Self-Concept as Outcome Variable

Results of model 2 (i.e., academic ability self-concept as outcome variable) tested in this paper can be found in Table 5. This moderation model was tested to examine the relation between African American student test anxiety, and an

alternative academic outcome of academic ability self-concept. The model examined ethnic and racial identity at Wave 3 as a moderator between Wave 3 test anxiety and Wave 4 academic ability self-concept. The direct effect of test anxiety on academic ability self-concept was not statistically significant. Within the moderation model, there was no significant interaction between test anxiety and ethnic and racial identity influencing the outcome of academic ability self-concept.

Post Hoc Analyses

Ethnic and racial identity moderates the significant interaction between test anxiety and GPA. The present study expected a strong negative relation between test anxiety and academic outcomes for those with low ethnic and racial identification, and no relation for those with high ethnic and racial identification. The interaction graph (Figure 1) depicts an unexpected interaction pattern (expected interaction in Figure 2), and post hoc analyses were run in order to determine trends in the relationship of test anxiety and academic outcomes moderated by ethnic and racial identity. Specifically, post hoc analyses were run to answer whether or not test anxiety was positively or negatively correlated with academic outcomes when participants were separated into high and low ethnic and racial identification groups.

The sample was split into high ethnic and racial identification (upper 50th percentile; $ERI \geq 2.75$) and low ethnic and racial identification (lower 50th percentile; $ERI \leq 2.67$). Correlations were run between test anxiety and GPA, as well as test anxiety and academic ability self-concept. For those with low ethnic and racial identity, there was a non-significant relation between test anxiety and GPA ($r = 0.06$), and test anxiety and academic ability self-concept ($r = -0.02$). In addition, for those

with high ethnic and racial identity, there was not a significant correlation between test anxiety and GPA ($r = -0.06$). However, there is a significant negative correlation between test anxiety and academic ability self-concept for those with high ethnic and racial identity ($r = -0.17$). As ethnic and racial identity increases, there is more of a chance that there will be a negative relation between test anxiety and academic ability self-concept. Taken together, the main results as well as the post hoc analyses indicate that ethnic and racial identity appears to be most protective at lower levels, rather than higher levels.

Chapter 5: Discussion

Overall, test anxiety, ethnic and racial identity, academic ability self-concept, and GPA outcomes hold important implications for African American adolescents. The literature indicates that test anxiety can have negative impacts on later academic outcomes, that African American students may experience increases in test anxiety compared to other groups, and ethnic and racial identity can have positive impacts on academic performance. This study has implications for future researchers examining the role of ethnic and racial identity's effects on the relation of test anxiety and academic outcomes for African American adolescents.

In sum, the results suggest that significant bivariate correlations between both academic outcomes of academic ability self-concept and GPA, were in line with the academic ability self-concept literature (Prince & Nurius, 2014). Unexpectedly though, test anxiety was not correlated with either academic outcome, though the literature indicates that for African American students, test anxiety may negatively impact academic achievement (Tempel & Neumann, 2014; Turner et al., 1993). Within primary analyses, ethnic and racial identity significantly moderated the relation between test anxiety and GPA, such that lower the level of ethnic and racial identity, the more protective it becomes. Similarly, post hoc analyses indicated that within the case of academic ability self-concept as well, ethnic and racial identity became more protective at lower levels, rather than at higher levels. These findings are unexpected given the available research indicating ethnic and racial identity as a prominent protective factor for African American children and adolescents with regard to mental health and academic outcomes (Davis III et al., 2006; Wong et al.,

2003). Specifically, ethnic and racial identity was found to moderate the relation between ethnic discrimination and African American adolescent school and socioemotional adjustment, and served as a protective factor (Wong, 2003). Additionally, it was found to serve as a protective factor within the relation of stereotype threat conditions and African American students' achievement outcomes (Davis III et al., 2006). These and other findings supported the investigation into ethnic and racial identity as a protective factor for the current sample of African American adolescents. However, surprisingly, this study's results suggested that low ethnic identity was more protective against test anxiety's negative impact on GPA than high identity. Further discussion of potential reasons for and contributors to these non-significant findings are explored in more detail below.

Test Anxiety and Academic Outcomes

Within the present study, the relation between test anxiety and the academic outcomes was slightly negative and statistically non-significant. Though experiencing test anxiety is typically seen as a significant risk factor leading to negative academic outcomes for children and adolescents, few studies have found mixed relations between test anxiety and achievement. Sung and colleagues (2016) examined the relationship between test anxiety and learning among secondary-school students and found that test anxiety's impact on academic achievement, was explained by an inverted-U shape. Primary analyses exhibited a small positive correlation between test anxiety and test scores. After splitting their sample into groups, they found that students with lower- and higher-achievement demonstrated lower levels of test anxiety, while moderate-achievement students demonstrated the highest levels of test

anxiety. Their findings did not support the findings of previous studies typically finding a negative correlation between test anxiety and achievement, wherein test anxiety is thought to lead to cognitive interference thus leading to poor performance (Sung, Chao & Tseng, 2016). In addition, students with higher achievement demonstrated a negative relation between test anxiety and achievement while students with lower achievement demonstrated a positive relationship between test anxiety and achievement (Sung, Chao & Tseng, 2016). These results suggest that previous cognitive interference models made relevant by researchers like Putwain (2008) and McDonald (2001), may not always apply within every adolescent sample (Sung, Chao & Tseng, 2016).

Putwain and colleagues (2018) have recently examined natural protective factors that may mitigate the impact of test anxiety on academic achievement outcomes, using a sample of secondary students. The results indicated compensatory effort (i.e., working hard for exams, working hard on schoolwork etc.) protected adolescents' performance against physiological symptoms of test anxiety (Putwain & Symes, 2018). Not only does higher cognitive and physiological symptoms of test anxiety predict examination performance in an additive manner, but physiological components alone have a relation with performance (Putwain & Symes, 2018). Effort's impact on the physiological components has implications for ways in which adolescents may be compensating for test anxiety, while reducing its impact on their achievement. The researchers speculated that it is likely that test anxiety motivates individuals to reduce the aversive state and its effects via both adaptive (e.g., increased effort) and maladaptive (e.g., reduced effort) strategies (Putwain & Symes,

2018). These natural reactions to test anxiety appear to be similar to documented reactions to stereotype threat via increased vigilance (Inzlicht & Kang, 2010) or academic disengagement (Schmader, Major & Gramzow, 2001). As test anxiety is more likely to be experienced by African American students (Clawson, Firment & Trower, 1981), it is possible that African American adolescents have found natural ways of compensating for the test anxiety experienced perpetually from stereotype threat. The previously referenced mixed findings of the relation of test anxiety and achievement, as well as natural ways in which adolescents experiencing test anxiety can compensate, may help explain the non-significant relation between African American test anxiety and academic outcomes in this study. That is, there may be other moderators not measured within this study, that African American students may be using to protect themselves academically from the impacts of test anxiety.

Ethnic and Racial Identity

The present study found unexpected moderation results, indicating that the lower one's level of ethnic and racial identification, the more protective it becomes. The results may raise larger questions about the protective value of ethnic and racial identity, or they may indicate that the unexpected results within this study are unique. As there are many ways to interpret these unexpected findings, several potential interpretations are made below regarding how ethnic and racial identity may have impacted the moderation results.

Ethnic and Racial Identity and Age

Variance of the ethnic and racial identity moderator (Table 3) may have impacted the overall analyses and the interpretation of its role in the relation between test anxiety and academic outcomes. Though there is a large degree of variance within the ethnic and racial identity moderator, there are high percentages of the sample who indicated low levels of ethnic and racial identity. For example, around 14% of the sample indicated ethnic and racial identity levels under 2 (out of 5), while only 7.6% of the sample indicated ethnic and racial identity levels above 4 (out of 5). The higher amounts of those participants indicating low levels of ethnic and racial identity, may be due to the age of the sample. The participants were in 8th grade during the time they provided ethnic and racial identity data. Though some researchers agree that ethnic and racial identity development is not always linear as individuals can regress and progress based on environmental triggers, many researchers' theories have commonalities that can be evaluated through the present sample.

Seaton and colleagues (2006) propose a four-stage model for African American ethnic and racial identity development: diffuse, foreclosed, moratorium, and achieved. Within this model of ethnic and racial identity development, diffuse and foreclosed statuses were conceptualized as immature starting points, with moratorium status serving a transitional stage, and achieved as the optimal ethnic and racial identity status (Seaton, Scottham & Sellers, 2006). Though the present study controlled for age within the sample, the sample consisted entirely of adolescents who may be at differing stages in their ethnic and racial identity development, as seen in the high number of adolescents with low ethnic and racial identity scores. Within

Seaton and colleagues' (2006) longitudinal study consisting of African American adolescent participants (7th-10th grade), 39% of adolescents remained in the same identity status after 1 year, 33% progressed in identity status, and 28% regressed in ethnic and racial identification after 1 year (Seaton, Scottham & Sellers, 2006). This study lends one to interpret that adolescence may be a period of variability in ethnic and racial identification, as well as stagnation as 67% of adolescents kept their ethnic and racial identity statuses or regressed in identification. As this is the case, it might then be possible that ethnic and racial identity was not as fully developed within this study's particular sample, at this particular period in their lives. It has been theorized that ethnic and racial identity changes over the course of a lifetime beginning in adolescence, and that adults are more likely to report having searched for, and committed to, a sense of ethnic and racial identity compared to adolescents (Yip, Seaton, & Sellers, 2006). Some researchers have theorized that heterogeneity of identity development during adolescent years may mask its potential as a moderator (Yip, Gee, & Takeuchi, 2008). This may not be true of all African American adolescents as a couple studies have shown ethnic and racial identity to be a protective factor for African American adolescents against the harmful effects of stereotype and ethnic discrimination (Davis III et al., 2006; Wong et al., 2003). Seaton's (2006) study itself, finds that those African American adolescents with more advanced ethnic and racial identity statuses had higher levels of psychological well-being. Within the present study though, it is possible that the variability in ethnic and racial identity that comes with adolescence, could have masked ethnic and racial identity's potential effects as a moderator.

Ethnic and Racial Identity Correlates

Although ethnic and racial identity has served as a protective factor against race-based discrimination (Wong et al., 2003) and research has more generally focused on its relation with positive developmental variables, there are studies that examine the relation between ethnic and racial identity and variables like discrimination and racism. Understanding the relation between ethnic and racial identity and negative variables like discrimination, is important as variables such as those can have a negative impact on African American adolescent achievement, academic curiosity, and academic persistence (Neblett, Philip, Cogburn, & Sellers, 2006).

For African American adolescents in particular, there is evidence for both buffering and exacerbating effects of ethnic and racial identity with regard to the relation between discrimination and psychological distress (Sellers & Shelton, 2003). Sellers and Shelton (2003) conducted a study with African American college students to examine the causal direction of relationships among perceived racial discrimination, psychological distress, and identity. They found that racial centrality and group identification was positively associated with perceived racial discrimination. That is, the more important being Black was to the African American college students, the more racial discrimination they indicated they had experienced (Sellers & Shelton, 2003). Their study also found that the relation between racial discrimination and psychological distress was unidirectional such that perceived racial discrimination caused psychological distress for the African American students (Sellers & Shelton, 2003). Certain aspects of group identification have been found to

result in more reports of discrimination, and discrimination can cause psychological distress (Sellers & Shelton, 2003) as well as decreases in achievement (Neblett et al., 2006).

For these reasons, the present study evaluated the relation between ethnic and racial identity and peer and teacher discrimination, post-hoc, to examine whether ethnic and racial identity could be related to variables that have the potential to stifle or mask its protective effects on achievement. A bivariate correlation was run between ethnic and racial identity and perceived peer discrimination ($r = 0.24$), and ethnic and racial identity and perceived teacher discrimination ($r = 0.20$) (Table 7), and both yielded positive significant results. Given previously referenced findings that increases in perceived racial discrimination can negatively impact African American adolescent achievement, academic curiosity, and academic persistence, it is notable that the present study's moderator exhibited a positive relationship with discrimination. Given these post-hoc results and the previously referenced research, ethnic and racial identity may have developed as a reaction to discrimination. Therefore, for some, ethnic and racial identity may serve as more of an indicator of discrimination in the students' environments, than as an indicator of the positive impacts one might typically expect from high ethnic identity. It may be possible that the deleterious impact of discrimination on achievement, could be masking or stifling the potential protective effects of ethnic and racial identity within the present study.

Research suggests that within specific discrimination contexts, strong ethnic and racial identification can either serve as an advantage or a disadvantage. Ethnic and racial identity researchers agree that there are two main goals for racial and ethnic

identity: to foster identification with and positive affiliation toward the group, and to prepare the individual for potential bias (Quintana, 2007). In this way, racially stigmatized adolescents need to develop awareness of racial discrimination that they might experience in the future in order to buffer against its negative psychological impact (Quintana, 2007). After examining longitudinal and cross-sectional ethnic and racial identity literature, Quintana (2007) concluded that exposure to discrimination can moderate the relationship between in-group pride and positive outcomes. That is, within contexts in which there is high exposure to discrimination, there are disadvantages to strong connections to one's ethnic and racial group (Quintana, 2007). This indicates that for those whose ethnic and racial identity is more central to their overall identity, research suggests that they are more strongly impacted by the effects of discrimination compared to individuals whose ethnic and racial identities are less central (Quintana, 2007). Quintana's (2007) findings also suggest that the development of ethnic and racial identity itself, may be partially related to the experience of racism. That is, for some the experience of racism can trigger identity exploration, and movement through different levels of identification. These research findings apply to the present study's results, as it is possible that the racism and discrimination experienced by the sample, could be undermining the potential effects of ethnic and racial identity as a moderator for test anxiety's impact on achievement. When examining the implications of these findings within the context of the current study, it is notable that the data was collected over twenty-five years ago when discrimination and racism could have been more salient, obvious, or perpetual in the adolescents' lives, compared to adolescents used in the studies conducted within

recent years. If this is the case, it may shed light on potential reasons for ethnic and racial identity not serving as a stronger protective factor within the relation on stereotype threat-related variables like test anxiety, on later achievement.

Limitations

There are several limitations that may have impacted the results of the present study. First, is the fact that all variables included within both models were measured via self-report from the participants, including their grades. The use of multiple methods of measurement is typically seen as the most effective, as solely relying on self-report measures can increase the risk of social desirability bias. Future studies utilizing these variables should incorporate measures from outside sources like school-reported outcomes (e.g., report cards), teacher-report, and parent-report measures, in order to lower the likelihood of social desirability bias influencing the results.

The second limitation is the prevalence of missing data throughout the utilized waves within the dataset. Specifically, the number of African American participants dropped from 533 in Wave 3 to 399 in Wave 4. Though African American participants dropped by 134 participants, the total sample stayed relatively stable from 1,060 to 1,057. This indicates that there was a large drop in African American participants specifically. Though this can be common in longitudinal studies, within this particular study attrition took place over the course of two waves (e.g., 3 years). Attrition can impact the statistical power of the study and pose a threat to overall validity. To address the impact of attrition, maximum likelihood estimation in Mplus

version 8 was used, which is the same statistical technique used within similar longitudinal studies using this sample (Wong et al., 2003).

Third, the MADICS dataset was collected from the years 1991-2000, which may impact the results' generalizability to African American adolescents today. As the present study examines the protective role of ethnic and racial identity within a stereotype threat model, it is notable that U.S. surveys indicate that issues of race and race-related biases are receiving increasing attention over the past few years.

According to a survey conducted in 2017, the number of Black individuals who consider racism to be a "big problem," has almost doubled from 2009 to 2017 (i.e., 44% of Black people to 81% of Black people surveyed) (Pew Research Center, 2017). In 2019, 69% of individuals surveyed rated that over the past 20 years the country has become "more diverse," (Pew Research Center, 2019). According to U.S. Census data, White individuals will become a minority in the country by 2045 (i.e., 49.7% non-Hispanic White, 24.6% Hispanic, 13.1% Black, 7.9% Asian, and 3.8% multiracial) (United States Census Bureau, 2018). Though this statistic does not fully recognize the abundance in ethnic diversity that may result, it does indicate changing demographics in the country – and may give insight into the ways in which research is changing. Research within the areas of ethnic and racial identity has greatly increased over the years and has focused on gaining more clarity into the construct's operationalization and the dimensions that combine in its measurement (Umaña-Taylor, 2015). These findings have implications not only for African American adults but also for children and adolescents in schools. As the country is becoming more diverse, the importance of ethnic and racial diversity, identity, and research has

increased as well. Adolescents today experience their identities in a different cultural context than those reflected in the sample of the present study. As such, findings from this study may not be generalizable to those outside of the cultural contexts of 1991-2000. Future studies on ethnic and racial identity as a protective factor for African American adolescents should be conducted to further understanding of how growing and adapting views of identity in a changing culture, influence its role and conceptualization as a whole.

Conclusions and Implications

The results of this study contribute to understanding ethnic and racial identity's role in the relation between African American test anxiety and achievement outcomes. The results stand in contrast to previous studies indicating use of ethnic and racial identity as a protective factor for African American children and adolescents (Davis III et al., 2006; Wong et al., 2003). Consequently, this study sheds light on a new perspective that within certain contexts, ethnic and racial identity does not moderate the relation between test anxiety and academic outcomes in the way hypothesized. The results warrant further investigation into other potential moderators of these processes.

This study's findings draw attention to the sparse research in the literature regarding protective processes for African American adolescents experiencing test anxiety. Despite the large number of studies concerning test anxiety, very few focus on the test anxiety experiences of African American students who experience it at a higher rate than their peers (Clawson et al., 1981). Of those studies that do examine test anxiety for African American adolescents, none focus on protective factors that

might mitigate its negative impacts. As suggested in the limitations, future studies evaluating these variables, should study the moderation within a longitudinal context using mixed methods approach, and a more current sample. Taking these changes into account may provide a more nuanced view into the experiences of African American adolescents today.

With regard to school-based practice, future studies should further investigate the protective impact of ethnic and racial identity as identity exploration can be encouraged and developed within a school environment with the help of culturally responsive curriculums and inclusive school cultures. Understanding ethnic and racial identity's development and role in the lives of African American lives, is an important step in engaging in culturally competent counseling and teaching practices. Further understanding African American adolescents' experiences with test anxiety within academic environments may help school staff make environmental changes to best suit the needs of the students.

In conclusion, the present study contributes to the existing literature on the moderating effects of ethnic and racial identity with regard to achievement outcomes, as it indicates that more research is needed to generalize results to the current population of African American adolescents. Further understanding of these variables and their role in the experiences of African American students, could lead to more informed preventative measures to combat test anxiety's negative effects.

Appendices

Table 1

Year, Grade, Measures and Number of Participants for Each Wave

| | Wave 1 | Wave 2 | Wave 3 | Wave 4 | Wave 5 | Wave 6 |
|-------------|--------|------------|--------|--------|-----------------|------------------|
| Year | 1991 | 1992 | 1993 | 1996 | 1998 | 2000 |
| Grade | 7 | 7 (Summer) | 8 | 11 | 1 yr. post-grad | 3 yrs. Post-grad |
| AA <i>N</i> | 863 | | 533 | 399 | 243 | |
| AA TA | | | 528 | | | |
| AA ERI | | | 517 | | | |
| AA AASC | | | | 366 | | |
| AA GPA | | | | 380 | | |

Note: The current study uses data from Waves 3 and 4. AA *N* = African American *N*; AA TA = African American Test Anxiety; AA ERI = African American Ethnic and Racial Identity; AA AASC = African American Academic Ability Self-Concept; AA GPA = African American GPA

Table 2

Sample Demographics at Wave 3

| Demographic Variables | % | N |
|------------------------|------|-----|
| Adolescent Gender | | |
| Female | 49.3 | 263 |
| Male | 49.9 | 266 |
| Missing | 0.8 | 4 |
| Ethnicity | | |
| African American | 100 | 533 |
| Social Economic Status | | |
| < \$5,000 | 1.5 | 8 |
| \$5,000 | 0.9 | 5 |
| \$10,000 - \$14,999 | 1.7 | 9 |
| \$15,000 - \$19,999 | 2.8 | 15 |
| \$20,000 - \$24,999 | 4.1 | 22 |
| \$25,000 - \$29,999 | 6.6 | 35 |
| \$30,000 - \$34,999 | 6.2 | 33 |
| \$35,000 - \$39,999 | 5.6 | 30 |
| \$40,000 - \$44,999 | 5.6 | 30 |
| \$45,000 - \$49,999 | 6.4 | 34 |
| \$50,000 - \$54,999 | 5.8 | 31 |
| \$55,000 - \$59,999 | 6.2 | 33 |
| \$60,000 - \$64,999 | 5.1 | 27 |
| \$65,000 - \$69,999 | 3.0 | 16 |
| \$70,000 - \$74,999 | 4.1 | 22 |
| \$75,000 - \$79,999 | 4.7 | 25 |
| \$80,000 - \$84,999 | 3.0 | 16 |
| \$85,000 - \$89,999 | 3.2 | 17 |
| \$90,000 - \$94,999 | 4.7 | 25 |
| \$95,000 - \$99,999 | 2.4 | 13 |
| > \$100,000 | 3.8 | 20 |
| Missing | 12.6 | 67 |

Table 3

Descriptives and Cronbach's Alphas for all Variables in Moderation Model

| Variables | Mean | SD | Minimum | Maximum | Cronbach's Alpha |
|---|------|------|---------|---------|------------------|
| Test Anxiety (Wave 3; 4-point scale) | 2.44 | 0.63 | 1.2 | 4.00 | 0.82 |
| Ethnic and Racial Identity (Wave 3; 5-point scale) | 2.75 | 0.89 | 1.00 | 5.00 | 0.68 |
| Academic Ability Self Concept (Wave 4; 7-point scale) | 5.22 | 0.93 | 2.4 | 7.00 | 0.84 |
| GPA (Wave 4) | 3.03 | 0.62 | 0.00 | 4.00 | - |
| Gender (Wave 3; 1=male, 2= female) | 1.5 | 0.50 | 1 | 2 | - |
| SES (Wave 3) | 11.3 | 5.12 | 1.00 | 21.00 | - |

Table 4

Intercorrelations Among Moderation Model Variables

| Variable and Time Point | 1. | 2. | 3. | 4. | 5. | 6. | 7. |
|------------------------------------|-------|---------|--------|-------|---------|---------|----|
| 1. Test Anxiety (Wave 3) | - | - | - | - | - | - | - |
| 2. Ethnic/Racial Identity (Wave 3) | -0.09 | - | - | - | - | - | - |
| 3. GPA (Wave 4) | -0.00 | -0.05 | - | - | - | - | - |
| 4. AASC (Wave 4) | -0.10 | 0.05 | 0.37** | - | - | - | - |
| 5. Gender | 0.06 | -0.09* | 0.22** | 0.02 | - | - | - |
| 6. SES | -0.09 | 0.19** | 0.11* | 0.04 | -0.04 | - | - |
| 7. Age | 0.08 | -0.16** | -0.19* | -0.09 | -0.12** | -0.19** | - |

* $p < .05$., ** $p < .01$., *** $p < .001$ Note: Gender was coded with “1” for male and “2” for female.

Table 5

Unstandardized and Standardized Estimates for Moderation Model 1: GPA as Outcome

| Parameter Estimate | Unstandardized | Confidence Interval | <i>p</i> -value | Standardized |
|--|---------------------|-----------------------|-----------------|---------------------|
| Test Anxiety | -0.02 (0.06) | (-0.13, 0.10) | 0.76 | -0.02 (0.06) |
| Ethnic and Racial Identity | -0.05 (0.04) | (-0.12, 0.03) | 0.24 | -0.07 (0.06) |
| SES | 0.02 (0.01) | (0.00, 0.03) | 0.03 | 0.12 (0.06) |
| Gender | 0.26 (0.06) | (0.14, 0.39) | 0.00 | 0.21 (0.05) |
| Age | -0.14 (0.07) | (-0.28, 0.00) | 0.06 | -0.10 (0.05) |
| Test Anxiety x Ethnic and Racial Identity | -0.13 (0.06) | (-0.25, -0.01) | 0.03 | -0.13 (0.06) |

Table 6

*Unstandardized and Standardized Estimates for Model 2: Academic Ability Self
Concept as Outcome*

| Parameter Estimate | Unstandardized | Confidence Interval | <i>p</i> -value | Standardized |
|--|----------------|---------------------|-----------------|--------------|
| Test Anxiety | -0.14 (0.08) | (-0.30, 0.03) | 0.10 | -0.09 (0.06) |
| Ethnic and Racial Identity | 0.03 (0.06) | (-0.08, 0.14) | 0.56 | 0.03 (0.05) |
| SES | 0.00 (0.01) | (-0.02, 0.02) | 0.74 | 0.02 (0.06) |
| Gender | 0.06 (0.10) | (-0.13, 0.25) | 0.54 | 0.03 (0.05) |
| Age | -0.15 (0.12) | (-0.36, 0.06) | 0.17 | -0.07 (0.05) |
| Test Anxiety x Ethnic and Racial Identity | -0.16 (0.09) | (-0.34, 0.02) | 0.08 | -0.11 (0.06) |

Table 7

Post-Hoc Analysis: Correlation of Ethnic and Racial Identity with Discrimination

| Variable and Time Point | 1. |
|--|--------|
| 1. Ethnic and Racial Identity (Wave 3) | - |
| 2. Perceived Peer Discrimination (Wave 3) | 0.24** |
| 3. Perceived Teacher Discrimination (Wave 3) | 0.20** |

*p < .05., ** p < .01., *** p < .001

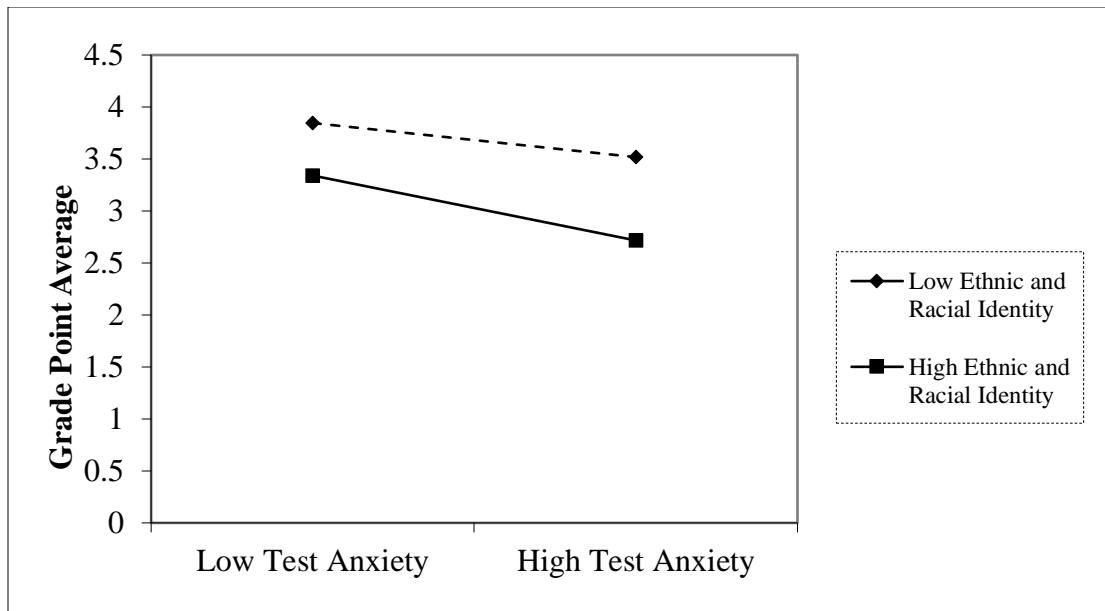


Figure 1. Interaction of test anxiety and GPA, with ethnic and racial identity as a moderator.

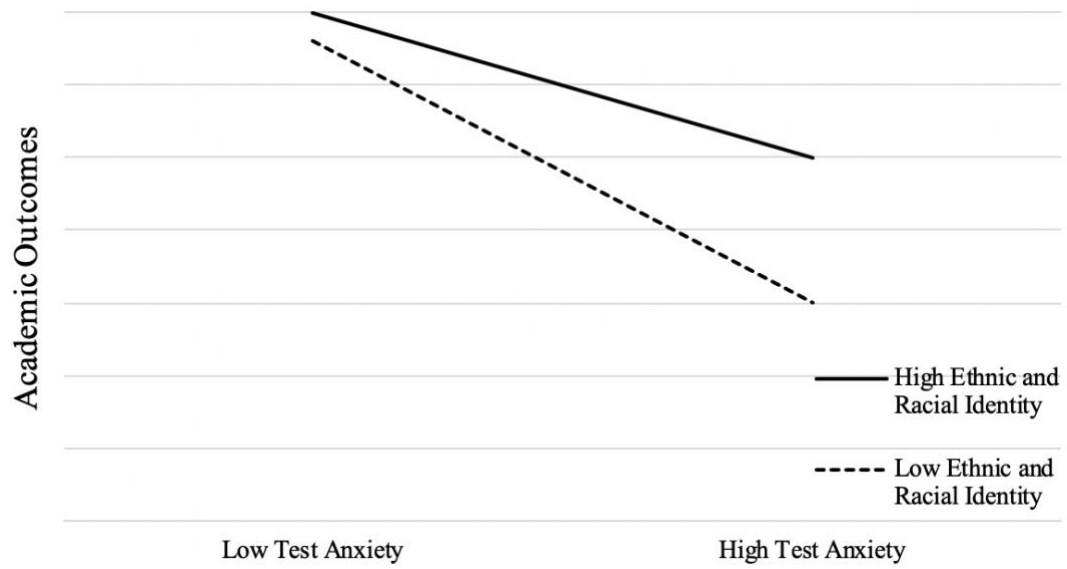


Figure 2. Expected interaction of test anxiety and academic outcomes, with ethnic and racial identity as a moderator.

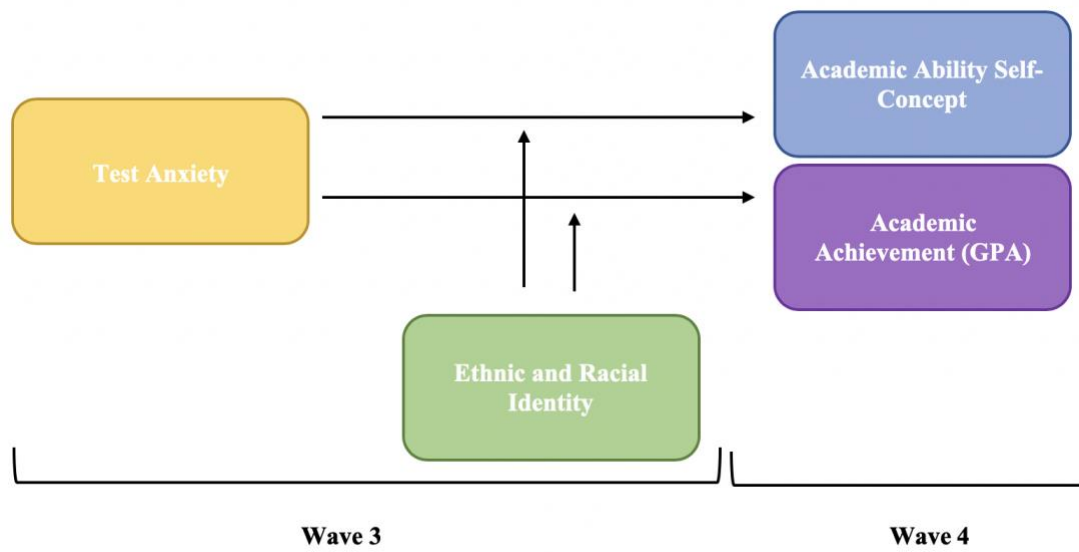


Figure 3. Hypothesized moderation model in which test anxiety's impact on academic achievement (grades and academic ability self-concept) is moderated by ethnic and racial identity.

Appendix B

Measures

Test Anxiety

1. How nervous do you get BEFORE you take tests at school?

| | | |
|--------------------|------------------|-------------------|
| Not at all nervous | Somewhat nervous | Extremely nervous |
| 1 | 2, 3, 4 | 5, 6, 7 |

2. How nervous do you feel DURING tests at school?

| | | |
|--------------------|------------------|-------------------|
| Not at all nervous | Somewhat nervous | Extremely nervous |
| 1 | 2, 3, 4 | 5, 6, 7 |

3. How much do tests at school scare you?

| | | |
|--------------------|------------------|-------------------|
| Not at all nervous | Somewhat nervous | Extremely nervous |
| 1 | 2, 3, 4 | 5, 6, 7 |

4. You get nervous if you have to explain your answer in class in front of the other students.

| | | | |
|------------------------|----------------------|----------------------|------------------|
| Not at all true of you | A little true of you | Somewhat true of you | Very true of you |
| 1 | 2 | 3 | 4 |

5. When the teacher calls on you in class, you think about how the other kids are looking at you.

| | | | |
|------------------------|----------------------|----------------------|------------------|
| Not at all true of you | A little true of you | Somewhat true of you | Very true of you |
| 1 | 2 | 3 | 4 |

6. You get nervous if you have to speak out in class.

| | | | |
|------------------------|----------------------|----------------------|------------------|
| Not at all true of you | A little true of you | Somewhat true of you | Very true of you |
| 1 | 2 | 3 | 4 |

Ethnic and Racial Identity

1. I have a close community of friends because of my race/ethnicity.

| | | | | |
|-----------------------|---------------------|---------------------|-----------------|----------------------|
| Not at all true of me | A little true of me | Somewhat true of me | Very true of me | Extremely true of me |
| 1 | 2 | 3 | 4 | 5 |

2. People of my race/ethnicity have a culturally rich heritage.

| | | | | |
|-----------------------|---------------------|---------------------|-----------------|----------------------|
| Not at all true of me | A little true of me | Somewhat true of me | Very true of me | Extremely true of me |
| 1 | 2 | 3 | 4 | 5 |

3. I have meaningful traditions because of my race/ethnicity.

| | | | | |
|-----------------------|---------------------|---------------------|-----------------|----------------------|
| Not at all true of me | A little true of me | Somewhat true of me | Very true of me | Extremely true of me |
| 1 | 2 | 3 | 4 | 5 |

4. People of my race/ethnicity are very supportive of each other.

| | | | | |
|-----------------------|---------------------|---------------------|-----------------|----------------------|
| Not at all true of me | A little true of me | Somewhat true of me | Very true of me | Extremely true of me |
| 1 | 2 | 3 | 4 | 5 |

GPA

On your 1st semester report card from 11th grade...

1. How many A's did you get?
2. How many B's did you get?
3. How many C's did you get?
4. How many D's did you get?
5. How many F's did you get?

Academic Ability Self-Concept

How good are you in...

1. ...Math?

| | | | | | | |
|-----------------|---|---|---|---|---|-----------|
| Not good at all | | | | | | Very good |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

2. ...Other school subjects?

| | | | | | | |
|-----------------|---|---|---|---|---|-----------|
| Not good at all | | | | | | Very good |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Compared to other kids your age...

1. ...how well do you do in Math?

| | | | | | | |
|----------------------------|---|---|---|---|-----------------------------|---|
| Much worse than other kids | | | | | Much better than other kids | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

2. ...how well do you do in other school subjects?

| | | | | | | |
|----------------------------|---|---|---|---|-----------------------------|---|
| Much worse than other kids | | | | | Much better than other kids | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

3. ...how well do you expect to do next year in Math?

| | | | | | | |
|----------------------------|---|---|---|---|-----------------------------|---|
| Much worse than other kids | | | | | Much better than other kids | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

4. ...how well do you expect to do next year in other school subjects?

| | | | | | | |
|----------------------------|---|---|---|---|-----------------------------|---|
| Much worse than other kids | | | | | Much better than other kids | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

References

- Ahmed, W., Minnaert, A., Kuyper, H. & Van der Werf, G. (2012). Reciprocal relationships between math self-concept and math anxiety. *Learning and Individual Differences, 22*, 385-389.
- Awad, G. H. (2007). The role of racial identity, academic self-concept, and self-esteem in the prediction of academic outcomes for African American students. *Journal of Black Psychology, 33*(2), 188-207.
- Blankstein, K. R., Flett, G. L. & Watson, M. S. (1992). Coping and academic problem-solving ability in test anxiety. *Journal of Clinical Psychology, 48*(1), 37-46.
- Blascovich, J., Spencer, S. J., Quinn, D., & Steele, C. (2001). African Americans and high blood pressure: the role of stereotype threat. *Psychological Science, 12*, 225-229.
- Bohrnstedt, G., Kitmitto, S., Ogut, B., Sherman, D., and Chan, D. (2015). School Composition and the Black–White Achievement Gap (NCES 2015-018). U.S. Department of Education, Washington, DC: National Center for Education Statistics. Retrieved [July 23, 2018] from <http://nces.ed.gov/pubsearch>.
- Branch, C. W. & Newcombe, N. (1986). Racial attitude development among Black children as a function of parental attitudes: a longitudinal and cross-sectional study. *Child Development, 57*, 712-721.
- Carter, R. T., Williams, S. & Silverman, W. K. (2008). Cognitive and emotional facets of test anxiety in African American school children. *Cognition and Emotion, 22*(3), 539-551.

- Cassady, J. C. & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary Educational Psychology*, 27, 270-295.
- Chapell, M. S., Blanding, B., Silverstein, M. E., Takahashi, M., Newman, B., Gubi, A. & McCann, N. (2005). Test anxiety and academic performance in undergraduate and graduate students. *Journal of Educational Psychology*, 2, 268-274.
- Chavous, T. M., Bernat, D. H., Schmeelk-Cone, K., Caldwell, C. H., Kohn-Wood, L. & Zimmerman, M.A. (2003). Racial identity and academic attainment among African American adolescents. *Child Development*, 74(4), 1076-1090.
- Clawson, T. W., Firment, C. K. & Trower, T. L. (1981). Test anxiety: another origin for racial bias in standardized testing. *Measurement and Evaluation in Guidance*, 13(4), 210-215.
- Cohen, G. L. & Sherman, D. K. (2014). The psychology of change: self-affirmation and social psychological intervention. *Annual Review of Psychology*, 65, 333-371.
- Cokley, K. O. & Chapman, C. (2008). The roles of ethnic identity, anti-white attitudes, and academic self-concept in African American student achievement. *Social Psychology Education*, 11, 349-365.
- Cross, W. E., Jr. (1991). *Shades of Black: Diversity in African-American Identity*. Philadelphia: Temple University.
- Cross, W. E., Parham, T. A. & Helms, J. (1991). The stages of Black identity development: nigrescence models. In Reginald Jones (Ed.) *Black Psychology* (3rd ed., pp. 319-338). Berkeley, CA: Cobb & Henry.

- Davis III, C., Aronson, J. & Salinas, M. (2006). Shades of threat: racial identity as a moderator of stereotype threat. *Journal of Black Psychology*, 32(4), 399-417.
- Ergene, T. (2003). Effective interventions on test anxiety reduction: a meta-analysis. *School Psychology International*, 24(3), 313-328.
- Evans, W. (1984). Test wiseness: an examination of cue-using strategies. *The Journal of Experimental Education*, 52(3), 141-144.
- Fairchild, A. J. & McQuillin, S. D. (2010). Evaluating mediation and moderation effects in school psychology: a presentation of methods and review of current practice. *Journal of School Psychology*, 48(1), 53-84.
- Gillen-O'Neel, C., Ruble, D. N. & Fuligni, A. J. (2011). Ethnic stigma, academic anxiety, and intrinsic motivation in middle childhood. *Child Development*, 82(5), 1470-1485.
- Goodenow, C. & Grady, K. E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *Journal of Experimental Education*, 62(1), 60-71.
- Hancock, D. R. (2001). Effects of test anxiety and evaluative threat on students' achievement and motivation. *The Journal of Educational Research*, 94(5), 284-290.
- Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research*, 58(1), 47-77.
- Hermans, H. J. M. & Dimaggio, G. (2007). Self, identity, and globalization in times of uncertainty: dialogical analysis. *Review of General Psychology*, 11(1), 31-61.

- Inzlicht, M. & Kang, S. K. (2010). Stereotype threat spillover: how coping with threats to social identity affects aggression, eating, decision making, and attention. *Personality and Social Psychology, 3*, 467-481.
- Jencks, C. & Phillips, M. (1998). *The Black-White test score gap*. Washington, DC: Brookings Institution Press.
- Jeynes, W. (2003). A Meta-Analysis: The effects of parental involvement on minority children's academic achievement. *Education and Urban Society, 35*, 202-218.
- Johnson, C. (2009). An examination of effective practice: moving toward elimination of achievement gaps in science. *Journal of Science in Teacher Education, 20*, 287-306.
- Khalaila, R. (2015). The relationship between academic self-concept, intrinsic motivation, test anxiety, and academic achievement among nursing students: mediating and moderating effects. *Nurse Education Today, 35*, 432-438.
- Lohbeck, A., Nitkowski, D. & Petermann, F. (2016). A control-value approach: relationships between academic self-concept, interest, and test anxiety in elementary school children. *Child Youth Care Forum, 45*, 887-904.
- Mandara, J., Gaylord-Harden, N. K., Richards, M. H. & Ragsdale, B. L. (2009). The effects of changes in racial identity and self-esteem on changes in African American adolescents' mental health. *Child Development, 80*(6), 1660-1675.
- McDonald, A. S. (2001). The prevalence and effects of test anxiety in school children. *Educational Psychology, 21*(1), 89-101.
- Neblett, E. W., Philip, C. L., Cogburn, C. D. & Sellers, R. M. (2006). African American adolescents' discrimination experiences and academic achievement:

- racial socialization as a cultural compensatory and protective factor. *Journal of Black Psychology*, 32(2), 199-218.
- Ong, A. D., Phinney, J. S. & Dennis, J. (2006). Competence under challenge: exploring the protective influence of parental support and ethnic identity in Latino college students. *Journal of Adolescence*, 29, 961-979.
- Onwuegbuzie, A. J. (1999). Statistics anxiety among African American graduate students: an affective filter? *Journal of Black Psychology*, 25(2), 189-209.
- Osborne, J. W. (2007). Linking stereotype threat and anxiety. *Educational Psychology*, 27(1), 135-154.
- Owens, M., Stevenson, J. Norgate, R. Hadwin, J. A. (2008). Processing efficiency theory in children: working memory as a mediator between trait anxiety and academic performance. *Anxiety, Stress, & Coping*, 21(4), 417-430.
- Oyserman, D. (2008). Racial-ethnic self-schemas: multidimensional identity-based motivation. *Journal of Research in Personality*, 42, 1186-1198.
- Pascoe, E. A. & Smart Richman. (2009). Perceived discrimination and health: a meta-analytic review. *Psychological Bulletin*, 135(4), 531-554.
- Parkinson, M. & Creswell, C. (2011). Worry and problem solving skills and beliefs in primary school children. *The British Journal of Clinical Psychology*, 50, 106-112.
- Pew Research Center. (2017). Republicans Divided in Views of Trump's Conduct; Democrats Are Broadly Critical. [PDF Report] Retrieved from <http://www.people-press.org/2017/08/29/republicans-divided-in-views-of-trumps-conduct-democrats-are-broadly-critical/>

- Pew Research Center. (2019). A Changing World: Global Views on Diversity, Gender, Equality, Family Life, and the Importance of Religion. [PDF Report] Retrieved from <https://www.pewresearch.org/global/2019/04/22/a-changing-world-global-views-on-diversity-gender-equality-family-life-and-the-importance-of-religion/>
- Planty, M., Hussar, W., Snyder, T., Kena, G., Kewal Ramani, A., Kemp, J., Bianco, K., Dinkes, R. (2009). The condition of education 2009 (NCES 2009-081). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.
- Prince, D. & Nurius, P. S. (2014) The role of positive academic self-concept in promoting school success. *Children and Youth Services Review*, 43, 145-152.
- Putwain, D. W. (2007). Test anxiety in UK schoolchildren: prevalence and demographic patterns. *British Journal of Educational Psychology*, 77, 579-593.
- Putwain, D. W. (2008). Deconstructing test anxiety. *Emotional and Behavioral Difficulties*, 13(2), 141-155.
- Putwain, D., Chamberlain, S., Daly, A. L. & Sadreddini, S. (2014). Reducing test anxiety among school-aged adolescents: a field experiment. *Educational Psychology in Practice*, 30(4), 420-440.
- Putwain, D. & Symes, W. (2018). Does increased effort compensate for performance debilitating test anxiety? *School Psychology Quarterly*, 33(3), 482-491.
- Quintana, S. M. (2007). Racial and ethnic identity: developmental perspectives and research. *Journal of Counseling Psychology*, 54(3), 259-270.

- Sarason, I. G. (1984). Stress, anxiety and cognitive interference: reactions to tests. *Journal of Personality and Social Psychology*, 46(4), 929-938.
- Sarason, R. (1984). Worry and emotionality as separate components in test anxiety. *International Review of Applied Psychology*, 33, 205-220. (in Cassady)
- Schmader, T., Major, B. & Gramzow, R. H. (2001). Coping with ethnic stereotypes in the academic domain: perceived injustice and psychological disengagement. *Journal of Social Issues*, 57(1), 93-111.
- Schmitt, M. T., Branscombe, N. R., Postmes, T. & Garcia, A. (2014). The consequences of perceived discrimination for psychological well-being: a meta-analytic review. *Psychological Bulletin*, 140(4), 921-948.
- Seaton, M., Parker, P., Marsh, H. W., Craven, R. G. & Yeung, A. S. (2014). The reciprocal relations between self-concept, and achievement goal orientations for mathematics success. *Educational Psychology*, 34(1), 49-72.
- Seaton, E. K., Scottham, K. M. & Sellers, R. M. (2006). The status model of racial identity development in African American adolescents: evidence of structure, trajectories, and well-being. *Child Development*, 77(5), 1416-1426.
- Sellers, R. M. & Shelton, J. N. (2003). The role of racial identity in perceived racial discrimination. *Journal of Personality and Social Psychology*, 84(5), 1079-1092.
- Sellers, R. M., Smith, M. A., Shelton, J. N., Rowley, S. A. J. & Chavous, T. M. (1998). Multidimensional model of racial identity: a reconceptualization of African American racial identity. *Personality and Social Psychology Review*, 2(1), 18-39.

- Serrano-Villar, M. & Calzada, E. J. (2016). Ethnic identity: evidence of protective effects for young, Latino children. *Journal of Applied Developmental Psychology*, 42, 21-30.
- Spencer, S., Steele, C., & Quinn, D. (1999). Stereotype threat and women's math performance. *Journal of Experimental Psychology*, 35, 4-28.
- Steele, C. M., (1997). A threat in the air: how stereotypes shape intellectual identity and performance. *American Psychologist*, 52, 613-629.
- Steele, C. M. & Aronson, J. (1994). Stereotype vulnerability and African Americans intellectual performance. E. Aronson (Ed.), *Readings about the Social Animal* (pp.409-421). New York: W. H. Freeman and Company.
- Steele, C. M. & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69, 797-811.
- Sung, Y., Chao, T. & Tseng, F. (2016). Reexamining the relations between test anxiety and learning achievement: an individual-differences perspective. *Contemporary Educational Psychology*, 46, 241-252.
- Tempel, T. & Neumann, R. (2014). Stereotype threat, test anxiety, and mathematics performance. *Social Psychology of Education*, 17, 491-501.
- Turner, B. G., Beidel, D. C., Hughes, S. & Turner, M. W. (1993). Test anxiety in African American school children. *School Psychology Quarterly*, 8(2), 140-152.
- Umaña-Taylor, A. J. (2015). Ethnic identity research: How far have we come? In C. E. Santos & A. J. Umaña-Taylor (Eds.), *Studying ethnic identity:*

- Methodological and conceptual approaches across disciplines* (pp. 11-26).
Washington, DC, US: American Psychological Association.
- Umaña-Taylor, A. J., Quintana, S. M., Lee, R. M., Cross Jr., W. E., Rivas-Drake, D., Schwartz, S. J., Syed, M., Yip, T. & Seaton, E. (2014). Ethnic and racial identity during adolescence and into adulthood: an integrated conceptualization. *Child Development*, 85(1), 21-39.
- United States Census Bureau. (2018). Older People Projected to Outnumber Children for First Time in U.S. History. [PDF Report] Retrieved from <https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html>
- Warren, M. K., Ollendick, T. H. & King, N. J. (1996). Test anxiety in girls and boys: a clinical-developmental analysis. *Behavior Change*, 13, 157-170.
- Wasserberg, M. J. (2014). Stereotype threat effects on African American children in an urban elementary school. *The Journal of Experimental Education*, 82(4), 502-517.
- Wong, C. A., Eccles, J. S. & Sameroff, A. (2003). The influence of ethnic discrimination and ethnic identification on African American adolescents' school and socioemotional adjustment. *Journal of Personality*, 71(6), 1197-1232.
- Yeo, L. S., Goh, V. G. & Liem, G. A. D. (2016). School-based intervention for test anxiety. *Child Youth Care Forum*, 45, 1-17.
- Yip, T., Gee, G. T. & Takeuchi, D. T. (2008). Racial discrimination and psychological distress: the impact of ethnic identity and age among immigrant

and United States-born Asian adults. *Developmental Psychology*, 44(3), 787-800.

Yip, T., Seaton, E. K. & Sellers, R. M. (2006). African American racial identity across the lifespan: identity status, identity content, and depression. *Child Development*, 77(5), 1504-1517.