

DIFFERENCES IN MOTIVATION, SELF-EVALUATION, AND ACADEMIC
ACHIEVEMENT FOR AFRICAN AMERICAN AND CAUCASIAN
STUDENTS USING STRUCTURAL EQUATION MODELING

by

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A DISSERTATION

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ABSTRACT

Structural equation modeling was used to determine if the relationships between motivation, self-evaluation, and academic achievement can be defined by a proposed structural model for a total sample ($N=231$) and for African American ($n=144$) and Caucasian ($n=78$) samples examined separately. The proposed model suggested that there are direct relationships between motivation and academic achievement, self-evaluation and academic achievement, and motivation and self-evaluation. Measurement models were tested to determine if the observed variables were appropriate measures for their respective latent variables. Structural models were then tested.

Results indicated that the proposed model does not correctly define all of the relationships between motivation, self-evaluation, and achievement. For the total sample, as well as the African American and Caucasian samples, a direct path was found from goal orientation to achievement. For the ethnic samples, self-evaluation was directly related to motivation and goals; however, it was not part of the total sample model. There were differences in the models of achievement for the African American and Caucasian samples, as motivation was more predictive of achievement for Caucasian students and goal orientation was more significant in defining achievement for African American students.

Results of this study should direct future research to consider further evaluation of models of achievement with different and larger populations of ethnic groups, as a significant difference was found for ethnicity on measures of achievement. Socioeconomic status and gender were also possible confounding factors that should be further investigated.

DEDICATION

This dissertation is dedicated to everyone who helped me through the process of developing this manuscript. In particular, I would like to dedicate this dissertation to my mother and father, for whom this would not be possible without, my husband who exhibited patience as I sat on the computer for hours on end, and my close friends who supported me every step of the way. Thank you.

LIST OF ABBREVIATIONS AND SYMBOLS

df	Degrees of freedom
F	Fisher's F ratio
M	Mean
MANOVA	Multiple analysis of variance
n	Number in subsample
N	Number in total sample
p	Probability (p -value)
r	Pearson product-moment correlation
R^2	Multiple correlation squared
SD	Standard deviation
SE	Standard error
SEM	Structural equation modeling
t	Computed value of a t -test
Λ	Lambda: Wilks' multivariate criterion
χ^2	Chi-Square test statistic

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CHAPTER 1

INTRODUCTION

Adolescents typically spend the majority of their day in an educational setting. Therefore, academic achievement is one of the most important areas of research for this population.

Academic achievement in adolescence can be affected by a number of factors, including motivation and beliefs about the self. In general, the research summarized below indicates that positive self-evaluations and higher levels of motivation, including areas of motivation related to mastery, hope, and self-efficacy tend to be positively related to or predictive of greater academic achievement and may differ between ethnicities.

Within today's classrooms, there are two areas of research that support the need for further investigation of motivation, self-evaluation, and achievement in the school context: 1) the growing population of minority students and 2) the continuing achievement gap between minority and Caucasian students. The growing population of minority students (Hobbs & Stoops, 2002) has great potential to affect overall classroom instruction as well as individual learners. For example, an instructor who does not understand how to effectively differentiate instruction to a diverse population of students may only be providing a small portion of the class with appropriate learning strategies. Instructors may also fail to use diversity (i.e., experiences, cultural backgrounds and customs, perspectives, etc.) in the classroom to teach a lesson.

Beyond the growing population of minority students, the achievement gap in reading and math between students from different cultural backgrounds continues to exist and illustrates the achievement performance differences on basic academic skills tests (i.e., reading and math)

between ethnicities. For example, African American and Hispanic students have had performance scores below those of their Caucasian counterparts on standardized measures of achievement in reading and math from the 1970's to the present (National Assessment of Educational Performance [NAEP], 2004). As this achievement gap continues to exist between minority and majority ethnic groups, it appears as if there are still gaps in research. Research appears to be lacking in terms of why achievement differences continues to exist, what factors may be influencing the continued achievement gap, and what can be done to improve educational outcomes for minority students in order to erase the achievement gap.

Graham (1994) reviewed research on motivation in African Americans and found that there were many factors affecting the outcomes of past studies. Findings of the literature review suggested that African Americans do not necessarily lack personality traits associated with motivational constructs, do not attribute achievement to external and uncontrollable sources more than Caucasians, and beliefs about ability and future success remain high regardless of achievement outcomes. In response to the findings, it was suggested that future research consider additional factors to possibly investigate the actual causes of significant differences posed in previous research between African Americans and Caucasians. Graham (1994) indicated that:

a motivational psychology for African Americans must: a) explicitly be concerned with the self, b) "incorporate a range of cognitive and affective determinants of behavior, c) be particularly sensitive to the dynamics of failure, d) acknowledge the complex relations between race and social class in this society, e) address the socialization antecedents of achievement strivings, and f) be able to contribute to the understanding of general principles of human behavior. (p.104-108)

Taking these suggestions, as well as utilizing research about motivation, self-evaluations, and academic achievement as a foundation this study proposed to determine if there is a single model to illustrate the relationships between academic hope, mastery orientation, self-esteem, self-efficacy, and academic achievement in a sample of ninth grade high school students. It also proposed to determine if there are differences between the relationships among variables when African American and Caucasian samples are analyzed separately. Although the research did not propose to explain the achievement gap between minority and Caucasian students, it attempted to provide an understanding as to where motivational and global self-evaluation differences may be occurring between ethnicities within the learning context and these constructs' relationships with academic achievement. Explaining where differences in relationships between constructs occur for African American and Caucasian high school students, if differences occur, can provide educators with information about how to structure educational activities in order to reach the growing population of minority students in the classroom and increase achievement for all students.

Definitions of Variables and Terms

This study proposed to examine the relationships and predictive qualities of self-evaluation and motivation on academic achievement. As this study proposed to examine a structural equation model for the variables to be defined, there were proposed latent variables, variables that are not directly measured, and observed variables, the actual measures which define a latent variable. Self-evaluation was one of the latent variables. The term *self-evaluation* refers to the ways in which an individual assesses himself or herself globally or in a specific setting. For the purposes of this study, global self-evaluations were evaluated. It is important to consider self-evaluation in research because all individuals have beliefs about how they feel

about themselves and their abilities and their performance of their skills and abilities. And, it is necessary to investigate how these beliefs differ across ethnicities and in relationship with academic achievement in order to promote the positive development of the self and increase achievement for all students. Self-evaluation was examined using the observed variables of self-esteem (Rosenberg Self-Esteem Scale; Rosenberg, 1979), self-efficacy (General Self-Efficacy Scale; Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, & Rogers, 1982), and academic self-efficacy (Zimmerman, Bandura, & Matinez-Pons, 1992).

Self-esteem can be defined as a person's feelings or beliefs about the self. Self-esteem most often considers feelings about the self in a global sense. *Self-efficacy* can be defined as a person's beliefs about performance on a task. Self-efficacy can be evaluated in a general or a task-specific sense.

Motivation is a second variable that was examined. Motivation is often defined as achievement motivation, the determination to obtain a sense of mastery and learning (Elliot & Dweck, 2005), or competence motivation, a person's beliefs about his or her ability to solve problems, in the context of education (Sternberg, 2005). Both forms of motivation are related, impact multiple areas of a person's life, and are seen throughout the life span. Elliot and Dweck (2005) suggested that, as achievement should be conceptualized in terms of competence, academic motivation should be conceptualized as competence motivation. Because the terms are often used in a similar sense, the general term motivation will be used throughout this paper. Motivation can influence an individual's performance in the classroom, as well as other settings. Therefore, it is important to consider the possible influences and predictability that motivational constructs have on academic achievement. For the purposes of this study, motivation was measured through *goal orientation*, specifically mastery- and performance- approach and

avoidance orientations, and *academic hope*. Goal orientation, the approach that a person takes to achieving goals, was measured with the Achievement Goals Questionnaire – Revised scale developed by Elliot and Murayama (2008). Academic hope, a domain specific hope disposition, was measured with six academic items from the Domain Specific Hope Scale – Revised (Shorey & Snyder, 2004).

Academic achievement is an important factor to examine as adolescents typically spend a great deal of their time in school. Further, one's academic achievement often has an impact on one's future outcomes. For example, completing high school results in more career opportunities, more opportunities for advancement in work and education, and the likelihood to earn a greater income, which affects a person's socioeconomic status (Kuncel, Crede, & Thomas, 2005; Steinberg, 1997). For the proposed study, academic achievement will be an outcome variable defined by student scores on a standardized achievement test (Georgia Criterion Referenced Competency Tests for reading, English/language arts, and math) and high school grade point average (GPA).

Ethnicity is an important term that will be used throughout this paper. The term ethnicity is often used to define an individual's background. Ethnicity references cultural heritage, country of origin, historical background, and may sometimes include race. However, the term ethnicity's connotation and the differences it has with the term race have been considered. Ethnicity has been found to be a more encompassing term when used in research than the term race and therefore a better factor to consider. Within the proposed study, the term ethnicity was used and may encompass multiple definitions to the participant (i.e., cultural heritage, country of origin, historical background, etc.). However, that is not to say that it may not be viewed by the participants as a term to identify race.

Socioeconomic status is another term that is important in the context of examining differences between ethnicities. Socioeconomic status can be defined in a number of ways. For the purposes of the current study, socioeconomic status was reported by the participants as parent and grandparent occupations. Occupations were assigned a level based on previous research used to define social class. It is extremely important to rule out any confounding factors such as socioeconomic status when examining ethnic differences so that differences are not attributed to characteristics of a population that may not be the actual factor causing the differences.

Growing Population of Minority Students in Public Schools

The growing population of diverse students entering our classrooms is prominent and a practical reason to continue to investigate the differences between ethnicities in the educational setting. Based on results of the 2000 U.S. Census, Hobbs and Stoops (2002) found that the number of individuals in the country who were of racial composition other than Caucasian was 1 in 4, compared to 1 in 8 in the year 1900. In a 20 year span, the Hispanic population in the United States has doubled and the Asian and Pacific Islander population has tripled (Hobbs & Stoops, 2002). Beyond the increases in these populations, there have also been increases in the Asian (12.5%), African American (4.4%) and American Indian (3.3%) populations over the 20 year span (Hobbs & Stoops, 2002). Many of the individuals who are part of the increasing population of minorities are young individuals who will soon be entering the public school system and adding to the minority population of students. Therefore, we have a strong need and obligation to conduct research in education with a diverse sample of individuals, including the increasing minority populations, in order to identify appropriate learning opportunities and increase learning outcomes, including academic achievement, for all students.

Beyond the individuals in elementary and secondary schools, as of 2004, the undergraduate enrollment of students from minority populations has increased to 32 percent in comparison to the enrollment rates in 1976 (NCES, 2007). Specifically, it was noted that since 1976 the Hispanic enrollment increased 372 percent and African American enrollment increased 103 percent. Many of these students are products of the public school system. Therefore, it only seems appropriate that research be conducted with individuals currently in the education system, beginning with primary and secondary schools, in hopes of improving education and higher education possibilities for future populations.

Achievement Gap between Minority and Caucasian Students

Historically, ethnic differences in academic achievement have been supported by research and such differences continue to exist. For instance, national assessments of students' performance in reading and math have been conducted by the National Assessment of Educational Performance (NAEP) since 1971 and 1973, respectively. The NAEP (2004) report concerning academic progress indicated that Caucasian students have outscored African American and Hispanic students in reading and math assessments since the 1970's; however, a narrowed achievement gap was noted between African American and Caucasian students at all age groups (9, 13, and 17) evaluated for reading and math by the National Center for Educational Statistics (NCES; 2005). Results of NAEP's 2004 analysis indicated there were narrowing in the achievement gap between Hispanic students and Caucasian students, although not significant, that illustrated some signs of progress. Thus, although the African American and Hispanic students are closing the gap, there is still a difference between the performances of students from different ethnic groups that needs continued attention.

Research in 2006 indicated that the number of minority students who took college entrance exams increased 7 percent for the SAT and 5 percent for the ACT compared to previous demographic statistics from 1996 and 1997, respectively (NCES, 2007). However, this research noted that the Hispanic and African American populations were still underrepresented in the number of students taking the exam and scored lower on both the verbal and mathematics sections of the SAT and ACTs in comparison to their Caucasian counterparts. These findings suggest that the achievement gap is not only evident in school-age children, but also in those students preparing for college.

In hopes of improving chances for academic success in minority populations, Arrington and Wilson (2000) proposed that addressing ethnic differences may help prevent students who are at-risk from failing and promote resiliency. Although there is support for claims promoting the use of ethnic differences in the classroom (i.e., cultural rituals, background knowledge, experiences, points of view, etc.) as a method for success, more needs to be done to advance learning and equality in education to improve achievement for all students. Additional research attempting to investigate why an achievement gap continues to exist and examine what factors may be playing a significant role in affecting achievement may be a way to address claims promoting the use of diversity in the classroom (i.e., cultural rituals, background knowledge, experiences, points of view, etc.). This research is warranted by the documented increasing minority population in the United States and the public school system. By conducting research pertaining to student motivation and students' beliefs about themselves with a sample of minority and Caucasian adolescents in public schools, educators may be provided with ways to use individual's experiences, cultural backgrounds and customs, perspectives in the classroom to assist in the learning process. That is, the research may provide educators with a better

understanding of how individuals of different ethnicities are motivated and how ethnic differences affect academic achievement. This may in turn educators with tools and interventions for individualizing classroom teaching to reach all students.

Motivation

Motivational constructs have been used in research across multiple environments for a number of years. Many motivational constructs have direct links to achievement outcomes. Motivational theories that focus on goals (general outcomes that an individual pursues) and goal setting can be utilized to assist research about outcomes individuals are attempting to achieve and the ways in which goals are obtained. Because individuals conceptualize how they will obtain their goals differently, investigating goal perceptions is important in determining what motivates individuals to achieve. Two motivational constructs that can be used to define goal perceptions and have been directly related to and predictive of academic achievement outcomes are academic hope and mastery goal orientation, and in some instances performance-approach goal orientation.

Academic Hope

Hope is a psychological construct often found within the literature on positive psychology. Hope has been identified as an important psychological factor affecting individuals for decades through related constructs, such as optimism and efficacy (Magaletta & Oliver, 1999). The construct of hope is a person's perceived beliefs about achieving a goal and the ways in which the goal can be obtained (Lopez, Ciarelli, Coffman, Stone, & Wyatt, 2000). There are two factors that contribute to a person's hope: agency and pathways. *Agency* is a person's beliefs about achieving a goal and *pathways* are the ways in which the goal can be obtained. For example, if an individual's goal is to get an A in class, agency might refer to the individual's

belief that an A is obtainable. Pathways to that goal might include obtaining A's on all assignments, completing extra credit assignments to compensate for poor grades, participating in class, etc.

Hope is often measured using the Dispositional Hope Scale (DHS) developed by Snyder and colleagues (1991). Research using the Dispositional Hope Scale indicated that hope is related to, but distinct from, a number of other psychological constructs and outcomes. Positive relationships have been found between hope and optimism, expectancy for success, exerting personal control, problem solving skills, and self-esteem (Snyder, Harris, Anderson, Holleran, Irving, Sigmon, Yoshinobu, Gibb, Langelle, & Harney, 1991). Similarly, Snyder and colleagues (1991) indicated that hope has been found to have negative relationships with constructs such as hopelessness and depression. Having high levels of hope has been found to be predictive of better grades and grade point averages in college students (Snyder et al., 1991; Snyder, Shorey, Cheavens, Pulvers, Adams, & Wilkund, 2002), grade point averages for middle school and high school students (Lopez, Bouwkamp, Edwards & Teramoto-Pediotti, 2000; Snyder, et al., 1991), and achievement test scores for students at the elementary level (McDermott & Snyder, 2000).

The Domain Specific Hope Scale (Simpson & Snyder, 1997) was developed based on general hope theory and the Dispositional Hope Scale. The Domain Specific Hope Scale includes the measurement of hope in six areas of life: social, academic, family, romance/relationships, work/occupation, and leisure activities (Lopez, et al., 2000). The Domain Specific Hope Scale has recently been revised by Shorey and Snyder (2004) but continues to include measures of the same domains of life. The present study used the revised scale and focused on the academic area of life and is referred to as *academic hope*. Academic hope is a construct developed based on the general hope theory. Academic hope maintains the general

principals which contribute to general hope (i.e., agency and pathways). Hope, a general disposition, has been suggested to be domain specific (Snyder, Cheavens, & Sympson, 1997). That is, a person can have a great deal of hope in one arena, but lack it in another. Therefore, it is necessary to begin conducting research using the domain specific areas of hope, such as academic hope, in order to strengthen the utility of the measure.

Most research on hope is often conducted with the general hope measure, which has been found to have predictive qualities. Because research has suggested the disposition may be more domain specific, academic hope was used for the purposes of the present study. Little research has been conducted with the Dispositional Hope Scale and the domain specific constructs of hope. The use of the academic hope scale has demonstrated utility in two studies. Findings by Kwon (2002) with a mostly Caucasian (80%) undergraduate sample yielded an indirect predictive relationship between academic hope and achievement, as academic hope was correlated with student work role adjustment from the Social Adjustment Scale – Self Report. Overall, this study indicated that the areas of the Domain Specific Hope Scale were more related to specific areas of life adjustment (Kwon, 2002). Campbell and Kwon (2001) also provided support for the use of domain specific measures of hope with a mostly Caucasian (82.8%) undergraduate sample. They also found distinctness between the hope domains displayed through interpersonal and achievement oriented hope.

Goal Orientation

Goal orientation, another motivational construct related to goal perceptions, is an achievement perspective that an individual assumes on tasks. The original research on achievement motivation began with McClelland and colleagues work on motivational dispositions. They ultimately defined an achievement motive as one's desire to meet a standard

of excellence by improving one's skills on a task (McClelland, Atkinson, Clark, & Lowell, 1953).

Research by McClelland and colleagues indicated that the original measure of achievement motivation captured aspects of both hope of success and fear of failure, which lead to additional research on achievement motivation that resulted in the study of goal orientation and the theory that there are performance goals and mastery, or learning, goals. Performance goals focus individuals on their achievement of a task in order to maintain a positive view of their abilities by themselves and others; mastery goals focus individuals on improving their abilities and achievement on tasks for internal reasons (Elliott & Dweck, 1988). These were the predominant categories of goal perspectives in initial goal orientation research conducted by Dweck and colleagues (e.g., Dweck 1992; Dweck & Elliot, 1988).

However, research on goal orientation has since been expanded to support the incorporation of the approach-avoidance distinction to goal orientation. The approach-avoidance distinction proposes that performance and mastery goals both have avoidance and approach aspects (e.g., performance-avoidance, mastery-avoidance, etc.) (Elliot & McGregor, 2001). Approach related behaviors are those in which the individual is willing to attempt the task; avoidance behaviors are those in which the individual purposefully evades engaging in a task. Research with undergraduates and middle grades students has supported the expansion of the initial goal orientation theory and has indicated that, although the mastery-approach is the favorable orientation (Anderman & Maehr, 1994; Anderman & Wolters, 2006; Archer, 1994; Elliot & McGregor, 2001), adapting multiple orientations to learning may be beneficial (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002).

Mastery. Mastery orientation, a focus of the present study, is one of the motivational approaches to a task and individuals who take this approach are most often intrinsically motivated to achieve their goals (Nesbit, Winne, Jamieson-Noel, Code, Zhou, MacAllister, Bratt, Wang, & Hadwin, 2006). Urdan and Turner (2005) indicated that mastery goals have a more positive relationship with motivation and learning outcomes than performance goals. Researchers have generally agreed that mastery orientation is the preferred approach to academic achievement, as it represents a positive approach to obtaining a goal with the intrinsic value of knowledge. In studies conducted with elementary students and teachers, it has been suggested that students should hold a mastery goal approach to learning and this type of approach should be developed and supported in the classroom (Ames, 1992; Maher & Midgley, 1991; Midgley & Urdan, 1992).

Mastery orientation has been found to have positive relationships with using effective learning strategies in undergraduates (Archer, 1994), choosing more difficult tasks in fifth graders (Elliott & Dweck, 1988), and focusing on effort over ability in undergraduates (Ames & Archer, 1988). Further, having a mastery orientation toward achievement has been reported to be predictive of better grades (Mehlbach, 2006) and enjoyment of learning, hope, and pride in undergraduates (Pekrun, Elliot, & Maier, 2006). Therefore, mastery orientation was used within the present study due to its positive relationships with other variables.

Performance. Performance goal orientations are often identified by individuals who are achieving to do better than peers and focus on a positive outcome (approach orientation) and individuals who focus on the avoidance of potential belief of incompetence (avoidance orientation) (Elliot, 2005). Wigfield and Wagner (2005) noted that performance-approach goals relate positively to performance and some aspects of motivation, whereas performance-avoid

goals have a number of negative consequences for students. Overall, research has indicated positive outcomes when performance-approach goals are endorsed (Elliot & Church, 1997; Lopez, 1999; Skaalvik, 1997; Tanaka & Yamauchi, 2000; Urdan, 2004). However, of the research conducted on achievement goal orientations, little has been done with adolescents.

Global Self-Evaluations

Within the research literature, two constructs comprise self-evaluation: self-esteem and self-efficacy. Self-esteem is how a person feels about the self, which may be positive or negative. Self-efficacy is defined as a judgment of one's ability to perform a task within a specific domain (Bandura, 1997). Although the constructs are distinct, self-esteem and self-efficacy have been found to have positive correlations (Huang, et al., 2007). Research finds that individuals with high self-esteem are more apt to attempt and persist with challenging tasks that result in success which in turn increases self-efficacy (Bandura, 1977; Baumeister, et al., 2003; McFarlin, et al., 1984). Quimby and O'Brien (2006) supported the theory suggesting self-efficacy has been valued as important in the development and preservation of positive self-esteem (Bandura, 1992; Kavanagh, 1992). Finally, research has theorized and provided support for the idea that self-esteem and general self-efficacy, along with other psychological traits (i.e., neuroticism and locus of control), "...may be markers of the same higher order concept" (Judge, Erez, Bono, & Thoresen, 2002, p. 693). Thus, for the purposes of this study, self-esteem and self-efficacy were categorized as two types of self-evaluation, because they are both measuring global beliefs about the self. A brief description of the research is provided here and will be expanded on within the literature review.

Self-Esteem

Self-esteem has been defined in general terms as the “thoughts and feelings about the self” (DeHart, Sroufe, & Cooper, 2000, p. 343). Self-esteem is considered to be a construct that is best assessed through global feelings about oneself. It is often measured through self-reports and can therefore be considered a self-evaluation. Self-esteem has demonstrated moderate, positive correlations with academic achievement (Baumeister, Campbell, Krueger, & Vohs, 2003); however, research has not indicated causal relationships between the constructs. A meta-analysis of self-esteem studies indicated that self-esteem is related positively to academic outcomes (Hansford & Hattie, 1982).

Self-Efficacy

Self-efficacy was defined within social cognitive theory (Bandura, 1989) as the beliefs people hold about their abilities, which can affect a person’s cognitive thought process. A person’s self-efficacy can result in positive or negative impacts on motivation (e.g., amount of effort extended on a task) and affective states (e.g., anxiety and coping). Self-efficacy, much like self-esteem, has been positively related to achievement outcomes (Multon, Brown & Lent, 1991), but it has also been found to be a strong predictor of achievement (Bong, 2001; Meece, Wigfield, & Eccles, 1990). Research cited by Schunk and Pajares (2005) indicated that self-efficacy was found to account for 14% of the variance in academic achievement in a meta-analysis, with stronger effects for high school and college students.

There is research supporting the use of self-efficacy in a global and task-specific sense within educational research (Pajares & Kranzler, 1995; Pajares, 1996). Research has noted that when self-efficacy is task specific, it is more predictive of achievement (Schunk & Pajares,

2005). Both a general measure and an academic measure were collected within the current study.

Previous Structural Equation Modeling Research Examining Psychological, Motivational, and Achievement Constructs

This study used structural equation modeling (SEM) to determine if there is a single model to illustrate the relationships between the latent variables of global self-evaluation, motivation and academic achievement. Research using structural equation modeling to investigate the constructs examined within the present study is beginning to grow. Some of the constructs and specific variables proposed for the present study have been investigated with other psychological, motivational, and cognitive constructs. For example, there is SEM research on goal orientation, depression and achievement (Sideridis, 2005), self-efficacy, self-regulation, and motivation (Garcia & Pintrich, 1991), and learning disabilities, efficacy and achievement (Hampton & Mason, 2003), etc. No research was found examining the relationships between motivation, self-evaluations, and academic achievement, which are the focus of the present study. A study conducted by Byrnes and Miller (2007) with high school students suggested that there is an importance to investigate more factors in the same study if a theoretical model of achievement is to be developed, considering student achievement is a complex construct. They further noted that, within educational research, it is necessary to go beyond the area the researcher is specializing in (e.g., motivation, reading achievement, math performance, etc.) and consider additional areas when examining achievement.

Research with self-evaluation, motivation and academic achievement conducted using SEM often fails to examine ethnic differences. Most research uses large samples to develop a general structural model. Few studies were found that examined minority and non-minority students. One study of minority and non-minority secondary students focused on future goal

setting, task motivation, and learning (Andriessen, Phalet, & Lens, 2006). However, the minority students in this study were individuals of Turkish and Moroccan origins because the study was conducted in Dutch schools. Most research found examining multiple groups often considered individuals of different religions or countries.

Statement of Problem

It is clear from recent U. S. census statistics that the minority population is continuing to increase. Further, despite substantial research concerning achievement and ethnicity since the 1970's, the achievement gap between Caucasian and minority students (African American and Hispanic students) continues to exist, although it is diminishing (NCES, 2007; NAEP, 2004). Therefore, there continues to be a need to conduct research that may attempt to provide educators with information that can assist with achievement for all students, but specifically targets underachieving minority populations.

Next, it is important to note that little research has been conducted with both motivational and self-evaluative measures in relation to achievement using structural equation modeling. Of the models presented in the literature, samples of different ethnic groups are combined and ethnic differences are not explored. Further, many studies use a predominantly Caucasian population and fail to consider that results may not generalize to various ethnicities due to cultural differences. Therefore, there is a need to conduct research that attempts to explain the relationships, or differences in the relationships, between motivational measures of goal perceptions, global self-evaluations, and achievement, as defined by a structural model, for different ethnic groups.

Purpose of Study

The purpose of the present study was to examine the relationships between variables of motivation (academic hope, mastery orientations, and performance orientations), two variables of self-evaluation (self-efficacy and self-esteem), and academic achievement using structural equation modeling (See Figure 1). Structural equation modeling was the method used for this study because it is a more sophisticated method of statistical analysis that takes into account the amount of error each variable has. The proposed model suggested that the latent variable of global self-evaluation has a direct relationship to academic achievement and an indirect relationship to academic achievement, as mediated through the motivation latent variable. Self-efficacy, one of the measures of global self-evaluation, is predictive of academic achievement (Bandura, 1989) supporting the direct relationship to achievement, whereas self-esteem's relationship to achievement is often found to be strictly correlational. Motivation was proposed to have a direct relationship to achievement, as both of the observed variables, mastery and academic hope, demonstrate predictability to academic achievement.

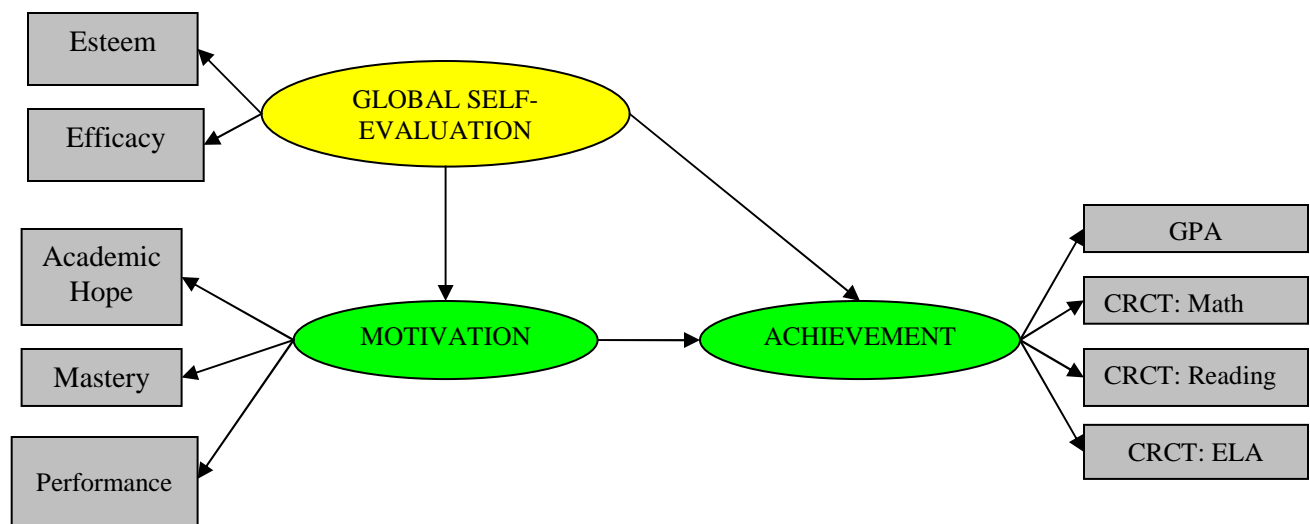


Figure 1. Proposed model of relationships between global self-evaluation, motivation, and academic achievement as measured by their respective observed variables.

Specifically, the study attempted to determine if there is a single model to define the relationships between the self-evaluation, motivation, and achievement latent variables for a sample of high school students. Second, this study examined the relationships between the latent and observed variables in search of similarities and differences between African American and Caucasian students in the sample. The models were examined and specifics were presented about where the differences occurred.

Measures of global self-evaluation, including self-esteem and self-efficacy, are often positively related to achievement, motivational measures, and each other. Self-efficacy and self-esteem are both global measures, but have also been identified as task, or situation, specific constructs; however, for the purposes of this study, global self-evaluations were examined. Since there is support for the use of task specific measures, especially for self-efficacy, a global measure and an academic measure were utilized. Research indicates that self-efficacy is predictive of and positively related to achievement, whereas self-esteem only has moderate correlations with achievement. Therefore, it is proposed that the latent variable global self-evaluation, as measured by self-esteem and self-efficacy, will have direct positive relationships and indirect (a correlation mediated through another variable) positive relationships with academic achievement.

Research using motivational measures of general hope and mastery goal orientation indicates that these measures often predict achievement outcomes and behaviors. Academic hope, which will be used in the proposed study, has been found to be a promising measure of domain specific hope. However, it has not yet been used extensively in research. Using the academic section of the Domain Specific Hope Scale – Revised (Shorey & Snyder, 2004), referred to as academic hope, provided additional validity and utility for the use of the academic

scale and illustrated its usefulness in its specific context, the education setting, and in combination with other measures. Due to the overall predictive and positive relationships between hope and mastery orientation found in previous research, it was proposed that a direct positive relationship would exist between the latent variable motivation, as measured by the observed variables of academic hope and mastery, and academic achievement.

There is no single conceptualization of achievement, which is a weakness within the literature (Elliot & Dweck, 2005). Academic achievement is thought to be inclusive of a number of factors including grades, standardized test performance, behavior, study skills, etc. Because the area of achievement covers such a broad spectrum of factors, its conceptualization had to be limited for this study. Therefore, for the purposes of this study, academic achievement was measured using state standardized test results for reading, language arts, and math, as well as high school GPA.

The study attempted to examine the relationships between global self-evaluation, motivation, and academic achievement in a sample of ninth grade African American and Caucasian high school students. Ninth grade students were chosen because they are students going through a possible difficult transition time and may be most in need of support in order to successfully complete high school. Also, in the targeted school district, there is a strong focus on improving the achievement levels of ninth grade students in order to increase graduation rates. The global self-evaluation latent variable was to be comprised of the observed variables of self-esteem and self-efficacy, measured with the Rosenberg Self-Esteem Scale (Rosenberg, 1979) and General Self-Efficacy Scale (Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, & Rogers, 1982), respectively. However, the academic self-efficacy measure, comprised of items from the Self-Efficacy for Self Regulated Learning and Academic Achievement scales,

developed by Zimmerman, Bandura, and Martinez-Pons (1992) was also collected and used due to a lack of a sufficient number of responses on the General Self Efficacy Scale.

Mastery goal orientation and academic hope were the observed variables used to comprise the motivation latent variable. Mastery goal orientation was measured using the Achievement Goals Scale - Revised (Elliot & Murayama, 2008) and academic hope was measured using six academic items from the Domain-Specific Hope Scale - Revised (Shorey & Snyder, 2004). All of the measures selected have been validated and found to be reliable (See Chapter 3 for specifics). Academic achievement was measured with students' scores on the Georgia Criterion Referenced Competency Tests (Reading, English/Language Arts, and Math sections) and high school GPA. Measures were administered in a survey format in paper and pencil format, after parental consent was signed and returned by the student's parent/guardian.

The following research questions and structural model were developed based on the presenting problems and previous theoretical research.

Research Question 1: Will the single model depicted in Figure 1 define the relationships (pathways) between the latent variables of motivation, global self-evaluation, and academic achievement for all students?

A single model was proposed to be examined because it is possible that the proposed model would not define the relationships between the latent variables for all students because there should be differences between the responses on the measures between ethnicities. However, it was hypothesized that the model would fit regardless of possible ethnic differences to be examined in Research Questions 2 and 2a. This was hypothesized because motivational measures have been found to be predictive of achievement in spite of ethnicity to support the path from motivation to achievement (Elliott, 1999; Elliot & Church, 1997; Harackiewicz,

Barron, & Elliott, 1998; Harackiewicz, et. al, 2002; Lopez, 1999; Lopez, Bouwkamp, Edwards, & Teramoto-Pediotti, 2000; McDermott & Snyder, 2000; Mehlbach, 2006; Skaalvik, 1997; Snyder, et al., 1991; Tanaka & Yamauchi, 2000; Urdan, 2004). Self-evaluation has research to support its direct and indirect relationships with academic achievement for both ethnicities as self-esteem has demonstrated moderate, positive correlations with academic achievement (Baumeister, Campbell, Krueger, & Vohs, 2003) and self-efficacy has been found to be predictive of academic achievement (Bong, 2001; Meece, Wigfield, & Eccles, 1990).

Research Question 2: When examined separately, what are the similarities and differences in the fit of the proposed model (See Figure 1) between the African American sample and the Caucasian sample?

Research Question 2a: If the model differs in terms of fit for the African American and Caucasian samples, where are the differences?

It was predicted that there may be differences in the models based on previous research conducted by Raineri (2007) and literature that indicates different relationships between the proposed measures and academic achievement based on ethnicity. For example, research tends to illustrate that African Americans hold positive views of the self regardless of achievement outcomes, although this is disputed by (Graham, 1994). Therefore, it was hypothesized that the predicted model would not reflect the relationships between the African American and Caucasian samples.

Similarities. It was proposed that some similarities would occur in the existence of paths between latent variables. For the both samples, motivation was predicted to be directly predictive of academic achievement because of its strong predictability in previous research. It was also predicted that the global self-evaluation variable would be mediated through motivation since

many of the observed variables (i.e., academic hope, mastery approach, and performance approach) comprising the motivation latent variable have been found to be predictive of academic achievement (Elliott, 1999; Elliot & Church, 1997; Harackiewicz, Barron, & Elliott, 1998; Harackiewicz, et. al, 2002; Lopez, 1999; Lopez, Bouwkamp, Edwards, & Teramoto-Pediotti, 2000; McDermott & Snyder, 2000; Mehlbach, 2006; Skaalvik, 1997; Snyder, et al., 1991; Tanaka & Yamauchi, 2000; Urdan, 2004) more frequently than self-evaluation variables, such as self-esteem.

Differences. Based on a review of how ethnicities learn that indicated Caucasian students strive for higher levels of individual achievement, it was proposed that the path coefficient for motivation to achievement will be stronger for Caucasian students. The path was also found to be stronger for Caucasian students in a pilot study conducted by Raineri (2007) in which this was the biggest difference between the ethnic models.

In order to ensure that the proposed differences are based on ethnic differences and not socioeconomic status (SES), a measure of social class was obtained and examined to rule out SES as a confounding factor. It was believed that there would not be significant differences in social class between ethnicities because the area of data collection has variable levels of social class within schools.

Limitations of the Study

The current research was proposed as an effort to add to the educational psychology literature by conducting a study which includes numerous variables (i.e., motivation, self-evaluation, and academic achievement) in an attempt to create a possible model of relationships using structural equation modeling. However, there were limitations to the study. First, the proposed model did not incorporate all possible measures of motivation, self-evaluation, and

academic achievement. The motivation latent variable was limited to mastery and performance orientations and academic hope. Examples of some other measures that may have an affect but were not included are general hope and optimism. The self-evaluation variable was comprised of a global measure of self-esteem and self-efficacy as well as a task specific measure of self-efficacy. Other types of self-evaluation, such as self-concept, were not addressed within this research. Last, the academic achievement variable was narrowed by only including academic test scores and GPA. It may be helpful in future studies to expand the definition of academic achievement to include items such as attendance, problem solving skills, and behavior variables.

A second limitation was that the sample for the study is of ninth grade students. Although this is a time of transition and a critical period to focus on, it may be beneficial to conduct the study with students in multiple grades. This study was not longitudinal, which is another limitation. With a longitudinal study, the research may be more powerful and provide more insight to how adolescents approach and beliefs of academic achievement change over time. Finally, the sample was limited to examining African American and Caucasian student differences. It was unlikely that another large sample would be available to collect data from another ethnic group, which is why these two groups were proposed. However, additional research needs to be conducted using samples of individuals of Hispanic, Asian American and other ethnic backgrounds.

Another limitation was that ethnic identity was not included as a measure within the proposed model. It was suggested by Graham and Hudley (2005) that ethnicity can affect motivation, in general. Based on this it was proposed by Campbell, Barry, Joe, and Finney (2008) that ethnic identity may play a role in achievement goal orientation. However, not much research has been conducted examining the possible differences. Of the research available, it has

been noted that there are differences in goal adoption based on ethnicity (Freeman, Gutman, & Midgley, 2002) and gender (Middleton & Midgley, 1997). No research specifically examines differences between ethnicities using a measure of ethnic or racial identity, rather the classification the individual indicates that they belong to. Due to its possible effects on measures of motivation, and the already illustrated differences in academic achievement in previous research (Freeman et al., 2002; Mickelson, 1990; Morgan & Mehta, 2004; Orr, 2003), ethnic identity should be considered as a variable in future models of achievement.

Implications of the Study

This study has a number of implications in the field of educational and school psychology. Specifically, this study provides information on the differences of motivational and self beliefs on achievement between ethnic groups using a high school sample. Most research conducted with a number of the measures used is done with college students. This study provides other researchers with a wider range of knowledge on how these measures predict and relate to achievement in a younger population.

It was hoped that this research would have direct implications for the classroom. Results of this study can provide teachers and other educational professionals with information on what motivates students' learning and achievement. By examining the differences between ethnicities, it may be possible to intervene with students in the ninth grade before they experience failure in high school and consider dropping out of school. It is essential to target students their first year in high school because this year sets the tone for the students' high school career.

This study also provides researchers and educators with a possibility to consider prevention of drop-out at an earlier time in the students' school careers by promoting motivation and positive self-beliefs before high school. By illustrating that motivation is predictive of

achievement, this study drives future research to examine motivation, self-evaluation, and achievement at earlier ages. It is also plausible that intervention or preventative materials can be developed in order to promote the appropriate constructs within individuals in order to create the best opportunities for positive achievement outcomes.

Overall, the current study has implications for the fields of motivation and achievement. It can further research within these areas using a younger population. It can lend suggestions for how to view students' approaches to achievement. Also, it can encourage consideration of when motivation and self-beliefs should be addressed in order to affect academic achievement and, hopefully, cultivate the creation of prevention and/or intervention programs in order to improve educational environments that foster academic achievement in different ways.

CHAPTER 2

LITERATURE REVIEW

The following literature review attempts to provide a comprehensive review of the most current and historically important research available in the field. It provides a summary of previous research on the topics that are central to the current study. This section presents results of past research on adolescents and achievement, the effects of ethnicity in education, and motivation and self-evaluation variables. It also reports the results of a pilot study conducted by the current investigator that led to the present study.

Adolescents and Academic Achievement

Adolescents spend a majority of their time in school or engaging in school-based activities. For this reason alone, it is relevant to examine adolescents in their regular environment, the educational setting. Further, the academic achievement of adolescents has been a national concern since the release of *A Nation at Risk* by the National Commission on Excellence in Education in 1983. Research has presented a number of reasons for promoting academic achievement in adolescents. In general, positive academic performance and achievement is related to one's future outcomes. It is more probable that students with higher levels of academic achievement are will graduate from high school and attend a higher education program (Eccles, Vida, & Barber, 2004; Englund, Egeland, & Collins, 2008; Miceli, 2009). Academic achievement, in terms of performance and attainment, is reported to be a predictor of later life outcomes, including income, employment, and wages and earnings (Nebitt, Lombe, LaPoint, & Bryant, 2009; Ou & Reynolds, 2008; U.S. Census Bureau, 2005). For example,

students who acquire adult literacy skills and are able to perform these skills when assessed earn higher job wages (Blau & Kahn, 2000). Additionally, doing well academically has also been found to have a positive short-term impact on social and emotional well-being (Redd, Cochrane, Hair, & Moore, 2002). In a study of Caucasian males followed from age 6 to 23, higher academic achievement was found to be promoted by participation in school activities and school identification (Veronneau, Vitaro, Pedersen & Tremblay, 2008). Further, Veronneau and colleagues (2008) noted that engaging in academic activities and having positive school identification therefore results in positive social and emotional identities and high school graduation. Overall, it has been suggested academic achievement and educational outcomes prepare adolescents and predict the successfulness of adolescents for adulthood (Redd, Brooks, McGarvey, 2001).

Ethnicity in Education

There is a great amount of ethnic diversity in the educational setting. The effects of ethnic diversity within education vary, but issues concerning ethnicity in the schools have occurred throughout history. Segregation plagued school districts for years before the decision of *Brown v. Board of Education of Topeka, Kansas* (1954), for a number of following years until the passing of the *Civil Rights Act of 1964*, and court ordered control over schools to end segregation. Today, school systems face different difficulties surrounding ethnicity. The first issue is the increased population of minority individuals in the classroom. The second is the achievement gap that continues to exist despite continued efforts to teach all students.

A Growing Population

Projections of a changing population have been made for over ten years. A report compiled by the Economics and Statistics Administration and the Bureau of the Census projected changes in the national population (Day, 1996). The report indicated that the elementary and secondary school aged population (5 to 17 years) was predicted to grow from 49 million to 52 million in 2000 and to 69 million by 2050. More recent research reports that public school enrollment is expected to reach about 49.8 million students in 2008, increasing 2.6 million students from 2000 (Planty, Hussar, Snyder, Provasnik, Kena, Dinkes, et. al, 2008). Projections have been made suggesting that the total enrollment in elementary and secondary education will increase 10 percent from 2005 to 2017 (Hussar & Bailey, 2008). Specifically, Hussar and Bailey (2008) indicated that high school enrollment increased 26 percent from 1992 to 2005 and may increase another 4 percent by 2017. This suggests there is a need to focus research efforts on school aged populations.

Research reports provided by the United States Census Bureau (2005) indicate that the minority population in the United States is increasing. With this increasing population, more minority individuals will be entering the public school system. A number of the individuals enrolled in school are likely to be ethnically diverse. As more minority individuals enter the school system, there will be a strong need to ensure that all students are achieving to their highest potential. Day (1996) highlighted that the non-Hispanic Caucasian population would decrease to 53 percent in 2050, as of 2006 it has decreased from 78 to 57 percent (Planty, et.al, 2008). The African American population was predicted to double in size by the middle of the century to approximately 61 million individuals and continue to increase. Individuals of Hispanic origin are

reported to be of the ethnic group that will contribute most to the growing population of the United States (Day, 1996).

Data retrieved from the U.S. Census Bureau (2005) indicated that school enrollment according to ethnicity has increased from 1980 to 2005. School enrollment was reported for the years of 1980, 1990, and 2005. Results illustrated a rise in school enrollment for all reported ethnicities (Caucasian, African American, and Hispanic origin). Planty and colleagues (2008, p. 10) reported that the percentage of ethnic minorities enrolled in public schools have increased from “22 percent in 1972 to 31 percent in 1986 to 43 percent in 2006.” As of 2006, Hispanic students were reported to account for 20 percent of public school students and African Americans only 16 percent (Planty, et. al, 2008). The researchers further noted that there are regional differences, with larger populations of minority students present in the south and the west.

The U.S. Department of Education and the NCES conducted the Public Elementary/Secondary School Universe Survey in 2004-2005. Data was presented by KewalRamani, Gilbertson, Fox, and Provasnik (2007) which indicated that minority students typically attend schools with a higher minority population. For example, the survey reported that, for African Americans, when the minority population was less than 25 percent only 9 percent of the population was African American; if the population was more than 75 percent minority, there was a 52 percent African American population. Similar results were found for Hispanic students. As the number of minority individuals increased, so did the proportion of African American and Hispanic students. Overall, research on the United States population reported that the number of ethnic minorities in the public schools is increasing. With an

increasingly diverse population of students, there is a need to focus research on the adolescent population in order to assist in improving academic and life outcomes for all individuals.

The Achievement Gap

Research dating as far back as the 1970's has investigated the achievement gaps present between minority and Caucasian students. Trusty, Mellin, and Herbert (2008) may have stated it best by stating that achievement gaps “are an enduring, pervasive, and multifaceted phenomenon (p. 1).” National data has been examined and reports repeatedly indicate continuing gaps in academic achievement.

The National Assessment of Educational Progress (NAEP) is a resource that tracks academic achievement trends over time through the administration of achievement tests in mathematics and reading to a nationally representative sample of individuals ages 9, 13, and 17 (Perie, Moran, & Lutkus, 2005). The most recent long term trend assessments reported by NAEP are from the 2003-2004 school year, which are compared to previous test results from 1999 and earlier. As noted in the introduction, Caucasian students have historically been outperforming African American and Hispanic students in reading and math assessments and gaps in achievement scores continue to exist (Perie et. al, 2005; KewalRamani et. al, 2007; Planty, et. al, 2008). Although African American student scores have increased in reading and math since 1971 and the difference in scaled scores between African Americans and Caucasians have decreased, Caucasian students continue to outperform (Perie et. al, 2005).

Research reported by Planty and colleagues (2008) indicated that according to NAEP data, the achievement gap on reading and math assessment between African American and Caucasian students in the 4th grade was smaller in 2007 than any other assessment year; however for 8th grade students there were not measurable differences between African Americans and

Caucasian students. Similarly, results stated that there were no measurable differences in math or reading for 4th and 8th grade Hispanic students compared to Caucasians; Hispanics are still underperforming.

Noguera (2008) stated “disparities in student achievement are reflected in graduation rates” (p. 97). And the total number of high school graduates from public schools has increased from 1992 to 2005 and is projected to increase again approximately 8 percent by 2017 (Hussar & Bailey, 2008). However, a review of a number of indicators of student persistence in school indicated that Hispanic and African American students had more school absences (3 or more) compared to Caucasian, Asian/Pacific Islander, and American Indian/Alaska Native counterparts (KewalRamani, Gilbertson, Fox, & Provasnik, 2007). Further, the researchers noted that the more school absences an individual had impacted performance on the NAEP math assessment; thus, with higher rates of absences, only 30 percent of African American students and 40 percent of Hispanic students obtained scores at or above the basic level on the standardized assessment.

Other indicators of student persistence that are reported to affect achievement are retention, suspension, expulsion, and dropout. When ethnicities were compared for students in kindergarten through 12th grade, results illustrated that African American students in the public schools had the highest percent of retention (17.1%), suspensions (19.6%), and expulsions (5.0%), followed by Hispanic students with 10.6%, 10.4%, and 1.4% respectively, compared to their Caucasian, Asian, and American Indian counterparts (U.S. Department of Education, 2003). Status dropout rates are reported to illustrate the number of individuals within an age group (16-24) who have not completed high school or obtained a GED (Planty, et. al, 2008). Dropout rates were examined by KewalRamani and colleagues (2007) and results suggested that Hispanic individuals have the highest level of dropout since 1989 at 22.4% in 2005, followed by American

Indian/Alaska Natives (14.0%) and African Americans (10.4%); while Caucasian students were reported to have 6% of individuals between 16 and 24 being high school dropouts. As of 2006, Hispanics still accounted for the greatest percentage of dropouts, 22%, compared to 11% of African Americans, and 6% of Caucasians (Planty, et. al, 2008). Each of these indicators illustrates that minority individuals do not fare as well as their Caucasian counterparts in many areas concerning academic achievement. Thus, the research supports the need to assist minorities in the school setting in order to improve student persistence which influences academic achievement.

Research examining the achievement gap between minority and majority populations discusses possible factors contributing to the existing disparities. Noguera (2008) indicated that ethnicity is most commonly considered to be the reason for poor academic performance due to theories promoting the general belief that minorities, specifically African Americans and Latinos, are inferior to Caucasian individuals in terms of intelligence. He also noted a number of other theories suggesting similar beliefs and ideas about the inferiority of minorities. Other literature has indicated that student beliefs and perceptions affect academic performance, as well as school identification, teacher expectations, and stereotypes. A review of this literature provides support for the need to examine student motivation and self-beliefs in regards to achievement skills and abilities and may offer insight as to why students exhibit certain levels of motivation and have beliefs about themselves. Again, although this research does not aim to explain the achievement gap between minority and Caucasian students, it attempts to provide an understanding as to where motivational and global self-evaluation differences may be occurring between ethnicities within the learning context.

Student perceptions, beliefs and values. Individuals' achievement is often affected by perceptions of academic outcomes. In one study examining the affects of perceptions on academic achievement between African American and Caucasian fifth grade students, Boykin, Albury, Tyler, Hurley, Bailey, and Miller (2005) found that culture had a significant affect on how fifth-grade students perceived academic success. They illustrated that African Americans were more accepting of communal achievement and enthusiastic learning (i.e., learning in groups and a non-competitive environment), whereas Caucasians were more accepting of individual and competitive achievement. That is, Caucasian students prefer to learn individually as opposed to group settings and are competitive and strive to outperform peers.

Other research has examined additional factors which influence achievement, such as the differences in beliefs and values individuals have, often based on ethnicity. Stevenson, Chen, and Uttal (1990) examined the beliefs of achievement across races and ethnicities in elementary students. They found that minority children had parents that placed more emphasis, meaning, and value on aspects of education. Graham, Taylor, and Hudley (1998) also examined the achievement values of individuals in middle school from various backgrounds through a peer nomination task. They found that middle school students most often nominated same-gender peers in terms of achievement values. For example, girls were more likely to select other high achieving girls regardless of race. Whereas, males were more likely to choose same-race peers regardless of achievement values. The minority students (African American and Latino) chose more low-achieving peers of the same race and Caucasian students made nominations similar to the girls and chose high-achieving Caucasian males.

Stereotype threat. The theory of *stereotype threat* (Steele & Aronson, 1995) is considered to contribute to academic disidentification and possibly promote the achievement

gap. The theory was described as follows, “Stereotype threat is being at risk of conforming, as self-characteristic, a negative stereotype about one’s group” (Steele, 1997, p.797). Steele (1997) further noted that stereotype threat is situational and can affect anyone in a group that holds a negative stereotype. Research has supported this theory for women (Cadinu, Maass, Rosabianca, & Kiesner, 2005; Schmander & Johns, 2003; Spencer, Steele & Quinn, 1999), men (Aronson Lustina, Good, Keough, Steele, & Brown, 1999), Latinos (Osborne, 2001; Schmander & Johns, 2003) and African Americans (Steele & Aronson, 1995; Stone, Lynch, Sjomeling, & Darley, 1999) in relationship to academic performance.

In a four study research project, Steele and Aronson (1995) examined the racial vulnerability of college students on verbal tasks. They found that when told the assessment was for a measure of intellectual assessment, African Americans underperformed compared to Caucasians suggesting racial vulnerability. They also found that even when the test was not diagnostic (i.e., the individual was not told the assessment was for a measure of intelligence), the presence of a stereotype posed a threat to impairing the performance of African Americans.

Osborne (2001) conducted a study to examine minority student performance on a task of academic achievement in relation to anxiety. He found that anxiety was, in part, a significant factor in mediating the relationship between race and academic performance for the Caucasian-African American and Caucasian-Latino comparisons in a cohort of senior high school students from the High School & Beyond study. When achievement was controlled for, there were significant differences in these groups in terms of the level of anxiety. There were overall significant differences between achievement scores as a function of race. Thus, even when individuals are not presented with a stereotype threat, there are racial differences in levels of

anxiety present in relation to academic achievement because many students have underlying knowledge of stereotype threat and fear of conforming to stereotypes.

Although there is considerable research concerning the negative affects of stereotyping, there are also suggestions that reversing stereotypes may affect academic performance. Walton & Cohen (2003) refer to the reversal of stereotypes as *stereotype lift*, in which the favored group is presented with a negative stereotype of the underperforming group and thus exhibit an increase in performance. Noguera (2008) suggested that examining how ethnic stereotypes are reinforced and reproduced within schools is important in evaluating the effects of race on achievement, as race may not be a significant contributing factor of achievement differences.

Mendoza-Denton, Kahn, and Chan (2008) conducted a series of studies with university students in the western U.S. to investigate whether fixed views of students' abilities can affect performance when favorable stereotypes are applied. Participant beliefs were manipulated and students were assessed on a GRE-like math task. In the first study, the stereotype for Asian students' superior performance was tested and in study 2, the performance of men versus women was examined, with the stereotype being that men outperform women in the area of math. Results supported the previous research of Walton and Cohen (2003) and indicated that emphasizing individuals' innate abilities can assist in improving academic performance.

School identification. School identification is often defined by engaging in positive school-based behaviors such as, "active classroom participation, high academic attendance and involvement in extracurricular activities," and emotional engagement through feelings of acceptance, value, and the belief that education is rewarding which ultimately results in higher levels of academic achievement (Honora, 2003, p. 59). On the contrary, academic disidentification is a "reconceptualization of the self and of one's values so as to remove the

domain as a self-identity, as a basis of self-evaluation” (Steele, 1997, p. 614). It has been noted that individuals disidentify in an attempt to protect themselves, however it can damage the constant motivation within the area of disidentification (Steele 1997; Steele & Aronson, 1995). Osborne (1997) researched how ethnicity and disidentification with academics were related. He found that academic disidentification was more consistent and likely in African American males and affected their correlations between achievement, grades, and self-esteem. Other groups, such as Hispanics and Caucasians, were not as susceptible to academic disidentification.

Becoming academically disengaged, or disidentifying, is often a result of negative teacher expectations (Finn, 1989) and limited teacher support (Ryan & Grolnick, 1986). Steele (1992) studied student-teacher relationships and found that in order for African American students to experience academic success, positive teacher support is necessary. A lack of teacher support in quantity or quality can result in negative school identification as was found by Honora (2003) in a study conducted with ninth grade students in an urban high school. McKown and Weinstein (2008) conducted a multi-study research project in first, third, and fifth grade urban classrooms examining classroom context, teacher expectations, and ethnicity in relation to academic achievement. Results of study 1 indicated that although students had similar levels of academic achievement, teachers exhibited a difference in expectations for African Americans and Latinos compared to European and Asian American students, with higher expectations being displayed for the European and Asian Americans. Study 3 examined the differences in student achievement at the end of the school year. Results suggested that when a difference in teacher expectations was present based on ethnicity, defined as a high-bias classroom, teacher expectancy accounted for .29 to .38 standard deviations of the achievement gap. Holding

different expectations based on ethnicity regardless of academic achievement level suggests the presence of stereotyping and may promote stereotype threat, and thus the achievement gap.

As we consider the difficulties faced in the school setting in terms of academic achievement, it is important to account for the differences not only within the ethnic group, but also the differences between individuals. There are a number of factors which affect academic performance in education. Some factors that require additional investigation include areas of motivation, such as academic hope and goal orientation (mastery), and global self evaluations, including self-esteem and self-efficacy.

Motivation

This section reviews the results of research on the areas of motivation that are considered in the current study. It reviews the concepts and constructs of hope, specifically academic hope, and achievement goal orientations.

Hope

Hope is a motivational concept that has been around for as long as we can remember. It has gained attention in the past few decades in the positive psychology literature as a cognitive set instead of a one-dimensional construct. Snyder, Harris, Anderson, Holleran, Irving, Sigmon and colleagues (1991) conducted a study with undergraduate students to investigate proposed elements which comprise the construct of hope. Snyder and colleagues suggested that the construct is composed of agency and pathways. Agency is one's sense of determination in achieving goals. Agency has been related in the literature to self-efficacy because both agency and efficacy focus on the belief that one can expect to obtain the desired outcome (Magaletta & Oliver, 1999). Pathways are the ways in which the goals can be obtained. Hope theory suggests that individuals use agency and pathways in order to achieve goals (Snyder, et. al, 1991).

Snyder and others (1991) define hope as, “a cognitive set that is based on a reciprocally derived sense of successful (a) agency (goal-directed determination) and (b) pathways (planning of ways to meet goals” (p. 571).

The construct of hope has been related to other motivational and psychological constructs. For example, positive correlations have been made between hope and positive coping behavior (Chang & DeSimone, 2001), greater constructive goal seeking-behavior (Chang & Banks, 2007), positive, rational problem solving (Chang, 1998; Snyder, et. al, 1991), positive affect and life satisfaction (Ryff & Keyes, 1995; Valle, Huebner, & Suldo, 2006), self-esteem, optimism, positive outcome expectancy and perceived control (Snyder, et. al, 1991).

It is often assumed that hope is universal. However, little research has been conducted examining hope theory across different ethnic groups to support this notion. It has also been suggested in an article by Snyder (1995) that minorities may report lower levels of hope in comparison to their Caucasian counterparts. Chang and Banks (2007) conducted a study with university students in anticipation of determining if there are differences in the levels, the function and the predictors of hope across ethnic groups. They found that there were differences in the levels of hope and in measures of problem solving styles. Latino’s reported higher levels of agency than Caucasian and African Americans; there were no significant differences in levels of pathways thinking. The following results were found in terms of the sources and predictors of hope by ethnic group. As for problem solving, African Americans reported higher levels of positive problem solving, and Latinos reported higher levels of rational problem solving and lower levels of the impulsive/carelessness style. Latinos and Asian Americans had lower levels of avoidance style. In terms of affect, African Americans reported more positive affect than other groups. Finally in terms of life satisfaction, Latinos had the lowest reports of life

satisfaction and African Americans have significantly higher levels than Caucasians. Overall, hope was found to function similarly across racial groups, yet the sources and predictors of hope (problem solving, affect, and life satisfaction) were noted to vary.

In a longitudinal study of hope and academic success in college, Snyder, Shorey, Cheavens, Pulvers, Adams and Wiklund (2002) investigated the influence of hope on students' grade point averages at the end of different semesters, overall grade point average, and graduation status. The researchers hypothesized that the individuals reporting higher levels of hope would have better academic outcomes. Results indicated that the Hope Scale scores were positively correlated with and predictive of cumulative grade point average. Students with higher levels of hope also had a greater likelihood of graduating from college. High hope has also been found to be predictive of goal setting and academic achievement in another study of college students (Snyder, et. al, 1991) grade point averages for middle school and high school students (Lopez, Bouwkamp, Edwards & Teramoto-Pediotti, 2000; Snyder, et al., 1991), and achievement test scores for students at the elementary level (McDermott & Snyder, 2000).

Academic hope. Based on hope theory and the Dispositional Hope Scale, Sympson and Snyder (1997) developed the Domain-Specific Hope Scale, later revised by Shorey and Snyder (2004) to be the Domain Specific Hope Scale – Revised, which measures six areas in which hope could be evaluated by domain. The domains include: academic, social, family, relationships, occupation, and leisure. Publications describing the development of and initial studies using the Domain Specific Hope Scale and the Domain Specific Hope Scale – Revised are available only through unpublished manuscripts. Thus, few publications have been found that use the domains within the scales, specifically the academic domain.

Of the available research on the academic scale of the Domain Specific Hope Scale, the focus of the research is on mental health. Specifically, Campbell and Kwon (2001) researched the relationship between personal style and hope using the Domain Specific Hope Scale in an undergraduate population. They combined domain scales to develop individual indexes measuring interpersonal hope and achievement-oriented hope. Correlations between the two Domain Specific Hope Scale indexes and other measures of personal style indicated negative relationships with dysphoria. The researchers also examined the relationship between the Domain Specific Hope Scale interpersonal and achievement-oriented hope. Results indicated a significant but moderate relationship. Overall, their results were supportive of the use of the Domain Specific Hope Scale and proposed further investigation of it.

Kwon (2002) attempted to replicate and expand previous research measuring the relationships between hope and dysphoria through defensive style. In doing so, he conducted a two part study with undergraduate students. Part two addressed additional issues beyond those addressed in part one including domain-specific hope, which he predicted would be highly correlated with its respective adjustment scale from the Social Adjustment Scale. Results provided support for the construct validity of the Domain Specific Hope Scale. In particular, the academic hope scale was highly correlated with the other domain-specific areas of the Domain Specific Hope Scale. Also, as hypothesized by Kwon (2002), the academic domain was most highly correlated with the Work Role as Student scale of the Social Adjustment Scale, which is its respective adjustment scale. Additionally, other domains of the Domain Specific Hope Scale were also highly correlated with their respective adjustment scales.

The findings of Campbell and Kwon (2001) and Kwon (2002) suggest the need for further research of domain-specific areas of hope in their respective and specific settings. This

proposal will be using the academic domain of the Domain Specific Hope Scale. Therefore, additional validity and reliability can be established for the measure. Further, the research proposed will take place in with undergraduates at a university, which should be a better setting for measuring the academic domain.

Goal Orientation

McClelland, Koestner, and Weinberger (1989) originally investigated achievement motives and described the differences between implicit and explicit motives. Implicit motives were determined to be unconscious and based on the affective, or personal pleasures obtained from completing a task; whereas, explicit motives were described as conscious, self-attributed beliefs that could be assessed with a self-report measure. McClelland and colleagues (1989) noted that explicit motives were often based on what a group thought was important, observations of the self in comparison to others, and feedback from others compared to implicit motives that were more often spontaneous behavior. Overall, implicit motives were found to be measures of more direct motivational thoughts and illicit spontaneous behaviors and explicit motives illustrated how one channels motivation into behaviors in response to social incentives.

McClelland's work also examined achievement motivation in response to socialization practices, or parenting. McClelland and Pilon (1983) conducted research with mothers on how they potty trained their children. Based on their results, they suggested that individuals with higher levels of achievement motivation have a desire to obtain a reward and avoid punishment for failure to meet expectations. Research by McClelland and others resulted in the suggestion by Schultheiss and Bruinsein (2005, p. 41) that "socialization practices emphasizing early independence, self-reliance, and mastery of skills help build a strong need for achievement." McClelland (1987) continued to research achievement motivation and found that individuals

with high achievement motivation have preferences different from those with lower levels of achievement motivation including: the need for feedback based on personal performance in comparison to past performance, the need to accept personal responsibility or have direct control over tasks, and the ability to choose challenging tasks. Individuals with higher levels of achievement have also been found to have more positive results in life outcome measures, such as a high annual income later in life (McClelland & Franz, 1992).

As the literature on goal orientation developed, researchers began to better understand achievement motivations and goals. Pintrich (2000a) defined goals as cognitive representations which are ‘individually stable’ and indicate ‘contextual sensitivity.’ Having goals and achieving goals are important in the context of education. Research has focused on and explored how individuals construct and attempt to achieve goals. Long, Monoi, Harper, Knoblauch, and Murphy (2007) discussed goal orientations in a study of eighth and ninth grade students in the urban midwest and stated that how an individual constructs goals leads to that individual’s goal orientation; goal orientations affect academic behaviors and achievement. Further, a number of goal theories indicate that achievement-related behaviors are often linked to pursuing one’s goals (Dweck, 1986; Dweck & Leggett, 1988; McClelland, Koestner, & Wienberger, 1989; Nicholls, Patashnick & Nolen, 1985; Pintrich & Garcia, 1991). One predominant theory within the literature is the achievement goals theory, which was focused on within the current study and thus is elaborated on here.

Achievement goal theory. The achievement goal construct was developed through the collaborative efforts of a number of researchers including Ames, Dweck, Maehr and Nicholls, each playing an important role (Elliot, 2005). Carol Dweck may be one of the most influential in the construct’s development. Dweck began researching achievement goals as early as the 1970’s

with her work on learned helplessness. Dweck and Reppucci (1973) examined the effects of expectancy of reinforcement and control on performance a block design task with fifth grade students. They found that when individuals did not take responsibility for the outcomes, they attributed their success/failure to ability and exhibited a decrease in performance. Conversely, those individuals who claimed responsibility attributed success and failure to effort. Diener and Dweck (1978) later analyzed learned helplessness and mastery oriented fifth grade children in terms of academic performance and achievement cognitions. Again, it was found that children classified as learned helpless attributed failure to lack of ability and their performance on the task at hand decreased. Whereas, mastery oriented children did not make attributions for their failure, but instead persisted on the task and engaged in self-monitoring and self-instruction. Thus, Dweck was influential in establishing the mastery and performance (helpless) goal orientations.

The achievement goal construct is based on the difference between two types of goals: mastery and performance. Mastery goals are also referred to as learning goals. Elliot and McGregor (2001) describe these goals by stating, “Mastery goals are focused on the development of competence through task mastery, whereas performance goals are focused on the demonstration of competence relative to others” (p. 501).

In 1988, Elliott and Dweck conducted a study with fifth grade children to test the achievement goal framework in terms of perceived ability and investigated Dweck’s initial goal orientations by specifically testing the proposal that there are two types of goals: learning and performance. They found that, as hypothesized, individuals with low perceived ability engaged in helpless responses when confronted with a performance task. However, if the individual had high perceived ability, that person exhibited a mastery-oriented response, as they persisted, did not display negative affect, or make attributions for failure. Students in a learning goal value

situation responded in a mastery-oriented way regardless of perceived ability. Other research provides support for these early findings. For example, Matthews, Zeidner, and Roberts (2006) reported that individuals with a learning goals orientation attempt to increase competence through acquiring new skills, place attention on the process and strategies one could use to obtain goals, and are often intrinsically motivated by learning. Until the examination and expansion of the achievement goal construct, performance goal were viewed as maladaptive (Witkow & Fuligni, 2007).

Elliot and Harackiewicz (1996) addressed an alternative framework to include approach-avoidance achievement goals. They proposed that the performance orientation can be broken up into approach goals (success) and avoidance goals (failure/poor performance). In a two experiment study with university students, results supported the predictive validity of the approach-avoidance achievement goals in terms of intrinsic motivation. Thus, performance goals were found to be not completely maladaptive. Elliot and Harackiewicz (1996) reported that only performance-avoidance goals produced negative results as individuals who accepted such goals had a fear of failure which damaged their intrinsic motivation. Research by Sideridis (2005) with fifth and sixth grade students found that performance-approach has positive correlations with achievement, effort and persistence; whereas avoidance goals were associated with low achievement, negative affect, and depression supporting the need for further defining performance goals.

Elliot and McGregor (2001) examined a 2x2 framework for the achievement goals construct. Their study of undergraduates included performance- approach and avoidance and mastery-approach and avoidance goals. Within their 3 part study, they provided support for this

framework, illustrating that there are distinct differences between each achievement goal, with the mastery-approach being more positive than all others.

Mastery orientation. Archer (1994) conducted a study in which she examined achievement goals in college students. Findings were supportive of the belief that mastery orientation was related to perceived ability, effective cognitive strategies, positive attitudes, and so on. Further, Archer's analyses indicated that mastery goal orientation contributed to the use of such strategies independent of perceived ability. Anderman and Maehr (1994) wrote a review of research indicating that, in multiple contexts, having a mastery approach to goals produces adaptive outcomes, such as more intense cognitive thinking. Anderman and Wolters (2006) concluded that research illustrated mastery goal orientation has a positive relationship to a number of areas concerning achievement, such as effort, persistence, and engagement on academic tasks. Mastery oriented individuals have been found to engage and persist in more difficult tasks and attribute success and failure to effort not ability (Ames & Archer, 1988; Dweck & Reppucci, 1973; Elliott & Dweck, 1988) and focused on solutions and learning in the face of failure (Diener & Dweck, 1978; Sideridis, 2005). Further, having a mastery orientation toward achievement has been reported to be predictive of better grades (Mehlbach, 2006) enjoyment of learning, hope and pride (Pekrun, Elliot, & Maier, 2006).

Pintrich (2000b) examined the differences between eighth and ninth grade students with learning and performance goals. Results illustrated that mastery oriented students were more likely to have positive adaptive outcomes (i.e., task value, performance, self-efficacy, positive affect, strategies) and performance oriented students had more maladaptive outcomes (i.e., self-handicapping). However, it was noted that adopting a performance approach was not problematic if paired with a mastery approach. Similarly, Harackiewicz and colleagues (2002)

reported that there is research which supports the positive findings for performance approach and the possibility of optimal outcomes when students adopt multiple achievement goal orientations. Specifically, they noted that performance approach goals have been linked to achievement and other adaptive outcomes (Elliott, 1999; Harackiewicz, Barron & Elliott, 1998). Based on research examining achievement in the college context, Harackiewicz, and colleagues (2002) stated, “Mastery and performance-approach goals independently promoted different achievement outcomes: Students adopting both goals are optimally motivated in this educational context” (p. 642).

Additionally, research has indicated that individuals with mastery oriented behavior tend to use positive statements about themselves more than performance oriented learners (Diener & Dweck, 1978). This suggests that there is a positive connection between mastery orientation and positive self-esteem. In a study examining achievement, goal orientation, and self-efficacy in mathematically gifted high school students, Malpass, O’Neil, and Hacevar (1999) indicated that as gifted students believe in malleable ability, and thus tend to be mastery oriented learners. Further, they noted that mastery oriented individuals have higher levels of self-efficacy and self-regulated learning. This research supports the connection between the motivational variable of goal orientation and forms of global self-evaluation such as self-efficacy and self-esteem, in addition to its relationship to academic behaviors and achievement.

Performance-approach goals. Performance goals have not always been considered to have positive relationships with achievement outcomes in the literature. However, as the research base grows and continues to examine the differences between approach and avoidance goals, more studies are beginning to find that performance-approach is a positive orientation, similar to that of mastery-approach. Pekrun, Elliot, and Maier (2009) cited a number of researchers (i.e.,

Elliot & Church, 1997; Lopez, 1999; Skaalvik, 1997; Tanaka & Yamauchi, 2000; Urdan, 2004) that found performance-approach goals were positive predictors of performance.

However, much of the research indicating positive relationships between performance-approach goals and academic achievement has been conducted with college students (Daniels, Stupnisky, Pekrun, Haynes, Perry, & Newell, 2009). Bong (2009) conducted a study to illustrate the differences of achievement goals by age. Bong (2009) found that younger children tended to display a mastery orientation; whereas adolescents (grades 5-9) often endorsed performance-approach goals, but continued to also demonstrate mastery-approach goals necessary to reduce maladaptive tendencies in a performance-oriented learning environment. Performance-approach goals in the study were found to be correlated positively with self-efficacy, strategy use, performance in math, and anxiety suggesting that learning centers continue to provide a mastery focused environment for children and adolescents for the best achievement outcomes (Bong, 2009). Walker and Greene (2009) also examined motivational beliefs in younger populations and found that performance-approach goals were not predictive of cognitive engagement in high school students. Other research by Midgley and colleagues (2001) disputed that the outcomes predicted by performance-approach goals may be dependent and differ based on age and culture. Therefore, research should take age and culture into consideration when examining the effects of performance-approach.

Global Self-Evaluations

Of all the motivational constructs in the research literature, self-esteem and self-efficacy are most frequently compared and examined in relation to other constructs. Additionally, self-efficacy and self-esteem are constructs assembled by an individual's cognizant thought (Huitt, 2004). Saunders, Davis, Williams, and Williams (2004) investigated the self-perceptions, or self-

evaluations, and academic outcomes of African American high school sophomores. They found that African American students with higher self-perceptions obtained greater academic outcomes. Findings suggest that improving self-esteem and efficacy in minority students may result in changes in attitudes and beliefs about school and improvements in academic skills. Therefore, it was proposed that self-esteem and self-efficacy be examined within the research presented. By examining these constructs among other motivation constructs, in relation to ethnicity and achievement, there is a chance that the results may provide insight into how educators and other professionals can improve self-esteem and efficacy in order to boost achievement.

Relationships between Self-Esteem and Self-Efficacy

Research on self-esteem and self-efficacy found that individuals who rate themselves as having lower ability tend to have lower self-esteem and lower self-efficacy on tasks (Hinsz & Matz, 1997). Further, individuals with lower self-perceptions reportedly set lower goals, had less positive attitudes, and put forth less effort in obtaining their goals. Even in contexts beyond the classroom, self-esteem has been reported to be related to self-efficacy. Lane, Jones, and Stevens (2002) examined the relationships between self-esteem, self-efficacy and coping strategies. They found that individuals with lower self-esteem had more significant reductions in self-efficacy and engaged in more maladaptive coping strategies following defeat in a tennis competition.

Research finds that individuals with high self-esteem are more apt to attempt and persist with challenging tasks that result in success which in turn increases self-efficacy (Bandura, 1977; McFarlin, et al., 1984; & Baumeister, Campbell, Krueger, & Vohs, 2003). While some research has found that self-esteem is important in the development of self-efficacy (Campbell, 1990;

Brown & Mankowski, 1993; Dodgson & Wood, 1998; Kernis, Brocker & Frankel, 1989), other research has noted that an individual's performance on a task influences their beliefs (Bandura, 1987), thus with experience, self-esteem increases. Bandura (1992) and Kavanagh (1992) suggested that self-efficacy is important in the development and continuation of positive self-esteem. Quimby and O'Brien (2006) conducted research with nontraditional undergraduate students that indicated self-efficacy contributed to the predication of self-esteem and life satisfaction. A meta-analysis conducted by Judge, Erez, Bono, and Thoresen (2002) examined the relationships between self-esteem, neuroticism, locus of control, and generalized self-efficacy. Results of a meta-analysis of 9 studies with a total sample size of 2, 431 indicated population correlations were highest between generalized self-efficacy and self-esteem ($p=0.85$).

Self-efficacy

Self-efficacy, or agency, is the central component of social cognitive theory (Bandura, 1977) and is based on Bandura's conception known as reciprocal determinism. Reciprocal determinism is a concept that suggests that personal factors, behavior, and environment interact in a reciprocal manner (Schunk & Pajares, 2005). Self-reflection, regulation, and organization are all part of Bandura's view of how individual's function. Self efficacy was developed with reciprocal determinism and these aspects of human functioning in mind, as self-efficacy is acquired through observation and feedback on social comparison and is then reflected on by the individual (Schunk & Meece, 2006). Self-efficacy is defined as, "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Self-efficacy affects an individual's effort, perseverance, resilience (Pajares, 1996; Long, et. al, 2007), thoughts and emotional reactions

(Bandura, 1997). Bandura (1993) indicated that self-efficacy contributes to academic development through student beliefs, teacher beliefs, and faculty beliefs of collective efficacy.

Self-efficacy has been positively linked to achievement outcomes. Malka & Covington (2005) examined the effects of perceived school performance on goal setting and graded performance in an ethnically diverse population of undergraduates at a west coast university. They utilized a multiple study approach to investigating their hypotheses. Results indicated that perceived self-efficacy is a predictor of academic performance. Zimmerman and Kitsantas (2005) made similar findings. Zimmerman and Kinsantas (2005) examined female high school students self beliefs and performance on homework tasks in relation to grade point average. Using structural equation modeling they found that self-efficacy had direct and indirect causal relationships with grade point average and homework quality. Other research has also supported the findings that self-efficacy is a strong predictor of academic achievement (Bong, 2001; Meece, Wigfield, & Eccles, 1990).

Further, Jonson-Reid, Davis, Saunders, Williams and Williams (2005) reviewed research on the effects of self-esteem and self-efficacy on achievement and examined the relationships of factors which affect academic self-efficacy. They focused on academic self-efficacy because: a) self-efficacy has been found to have strong effects on performance (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001; Bong, 1999; Zimmerman, 2000; Zimmerman, Bandura, & Martinez-Pons 1992), and b) it has been indicated that self-efficacy appears to be domain specific. Jonson-Reid and colleagues (2005) found that improving African American students' cognitions about the importance of education in order to affect their academic self-efficacy will have greater effects than solely increasing self-esteem, as is the goal of most interventions programs.

Additionally, there are ethnic differences when examining self-efficacy, which may be important to consider within the current proposal. Results of a number of studies indicated that there were significant relationships between racial and ethnic identification and self-efficacy (Arroyo & Ziegler, 1995; Oyserman, Harrison, & Bybee, 2001; Smith, Walker, Fields, Brookins, & Seay, 1999). Arroyo & Ziegler (1995) examined the development of the Racelessness Scale and the correlates of the construct of racelessness in African American and Caucasian students ages 13 to 20. They found significant relationships between racial identity and self-efficacy for African Americans. Further, he found that membership and self-efficacy were significantly correlated for Caucasian individuals. A study by Smith and colleagues (1999) conducted with sixth grade students indicated positive relationships between self-esteem and efficacy, and ethnicity and efficacy in a path model using structural equation modeling for analysis.

Self-efficacy is also often referred to as a type of motivation, competence, as it is reported to have strong effects on performance. However, it was not being considered a type of motivation within the current study as the global aspect was to be examined and not the task-specific form of efficacy, although both were collected. Not only is self-efficacy considered competence motivation, but it is also related to the motivational constructs within the proposed study. Self-efficacy can be referred to as one's agency, a key component in the hope construct, and thus has a positive relationship with hope (Magaletta & Oliver, 1999). Overall, research supports the use of a general measure of self-efficacy in the current research proposal, as it aims to determine the relationships among a number of motivational and self-evaluative constructs and achievement.

Self-Esteem

Self-esteem is one of the most extensively researched measures with regards to ethnic identification. A majority of studies have found positive correlations between the constructs (Phinney, 1990; Phinney & Alipuria, 1996; Roberts, Phinney, Masse, Chen, Roberts, & Romero, 1999; Rowley, Sellers, Chavous, & Smith, 1998; Smith, Walker, Fields, Brookins, & Seay, 1999). And, despite beliefs and theories that suggest self-esteem is not an important factor in achievement for diverse populations, there has been an increase in research on creating multicultural classrooms. Such research has proposed building self-esteem in students to improve academic achievement and motivation (Sogunro, 2001). Research by DuBois, Lockerd, Reach, & Parra (2003) examined which strategies can be used to most effectively enhance students' self-esteem. They polled adolescent students to find out what they felt was most important to make improvements in self-esteem. Results indicated that three things were needed within an intervention program: a) positive experiences in multiple settings, b) decreased reliance on negative sources, and c) sensitivity to diversity (DuBois, et al., 2003).

In line with the research opposing the use of promoting self-esteem are the results of a cross-sectional study of 6th through 12th graders by Conner, Peyrazli, Ferrer-Wreder, & Grahame (2004). They examined the relationships between a number of factors and self-esteem and found that ethnicity was not correlated with self-esteem. However, they noted that there have been a number of studies which illustrated positive correlations, and suggested that the limitations of the study may have been the reasons for the results. In response, they proposed future research examine the levels of self-esteem and ethnicity in terms of schools majority ethnic populations. According to Conner and colleagues (2004), there are mixed findings for research on self-esteem and ethnicity. Therefore, there appears to be a need to continue investigating self-esteem in

terms of race and ethnicity. The current research proposal attempts to do so by examining the relationship between self-esteem, motivation, and academic achievement and comparing structural models for different ethnicities. Overall, self-esteem has demonstrated moderate, positive correlations with academic achievement (Baumeister, Campbell, Krueger, & Vohs, 2003); however, research has not indicated causal relationships between the constructs.

Previous Structural Equation Modeling Research Examining Psychological, Motivational, and Achievement Constructs

Research has been conducted using structural equation modeling within the areas of psychology, motivation, and achievement. However, much of the research looks at each area individually, or addresses only two of the areas at once, such as psychology and motivation. Further, there are a plethora of constructs to consider within each field of study, that no articles have been found that attempt to cover all of the areas within the proposed study together.

Of the available research, structural models have been tested between multiple constructs in the proposed study. A number of articles have been published examining the relationships between motivation variables and academic achievement. Zusho, Pintrich and Cortina (2005) investigated the relationships between achievement goals and motives and motivational outcomes for Asian American and Caucasian college students on a math task. The students completed questionnaires about their achievement goals (performance vs. mastery), motivation (success approach or fear of failure) and perceptions of competence, anxiety and interest in the task. Structural equation modeling did not result in significantly different models by ethnicity. Achievement goals (mastery, performance-approach, performance-avoidance) were reported to be related to outcomes and mediate the effects of motives on motivational outcomes. Results

replicated findings of previous research indicating that motives direct goal orientations and thus motivational outcomes.

Secondary analysis of the National Longitudinal Educational Study from 1988 by Byrnes and Miller (2007) examined the effects of predictors on math and science achievement for 8th grade students followed through 12th grade. They investigated opportunity factors, propensity factors (motivation), and distal factors (SES). Results revealed that using structural equation modeling 58-81% of the variance was explained for academic achievement through family and propensity factors, including motivation. Faircloth and Hamm (2005) also explored the effects of motivation on academic success on high school students. However, they approached motivation as a form of efficacy and value of school activity. Results indicated that a sense of belonging, as through friendships, acts as a mediator between efficacy beliefs, valuing of school activities and academic success.

Other research using structural equation modeling to assess models of achievement with motivational variables consider additional contributing factors. For instance, Gonzalez-Pienda, Nunez, Gonzalez-Pumariega, Alvarez, Roces, and Garcia (2002) included measures of parental involvement and aptitude characteristics along with causal attributions and self-concept and examined models in success and failure situations with 12 through 18 year old adolescents. Findings suggested that parent involvement has a significant effect on student characteristics. Self-concept, which often includes self-efficacy, was reciprocally related to causal attributions when failure was examined and self-concept was significantly causally related to academic achievement. Aptitude and self-concept accounted for the variance of academic achievement, with self-concept being the predominant factor.

Other research using structural equation modeling tends to focus on self- beliefs, including efficacy and esteem. Hailikari, Mevgi and Komulainen (2008) examined the relationships between academic self-beliefs, prior knowledge and prior success in university students. They found the self-beliefs correlated positively with previous success and had a direct influence on prior knowledge test performance. However, beliefs did not directly predict student achievement; there was only an indirect path mediated by prior knowledge. Garcia and Pintrich (1991) explored the relationships between intrinsic motivation, self-efficacy and self-regulated learning in college students. Their model illustrated that motivation and efficacy had a significant effect on self-regulated learning and intrinsic motivation had an effect on self-efficacy. Overall, results indicated that “an orientation to learning and mastery results in higher levels of efficacy and deeper cognitive engagement” (Garcia & Pintrich, 1999, p. 1).

Self-efficacy was also found to be an important factor in academic performance when considering it in combination with psychopathology and resource management in college students (Brackney & Kaeabenick, 1995). They found that poorly adjusted students had reported to be less competent and engaged in less self-regulation. Therefore, although psychopathology had an indirect effect on academic performance, it was found to be mediated by efficacy and resource management. Hampton and Mason (2003) examined the how learning disabilities, gender, sources of efficacy and efficacy beliefs affect academic achievement in high school students. Results of structural equation modeling suggested that learning disabilities influenced self-efficacy indirectly, and sources of self-efficacy had a direct effect on efficacy creating an impact on academic achievement. Overall, 55 percent of the variance of academic achievement was explained in the model.

Fenollar, Roman, and Cuestas (2007) examined the relationship between a number of predictive factors of academic achievement and performance in a college population. Specifically, they investigated achievement goals, study strategies, self-efficacy, and class size on academic performance. The final structural model indicated that self-efficacy had correlational coefficients with all of the achievement goal measures and was mediated to academic performance through study strategies, including effort, surface processing and deep processing. Lastly, a study was found using structural modeling to investigate cognitive ability, personality and academic performance in adolescence. Leeson, Ciarrochi, and Heaven (2008) conducted a three year longitudinal study of predicted grades. They found that positive thinking variables, including hope and attributional style predicted higher grades. Self-esteem was less of a contributor to predicting grades; however it was part of the positive thinking latent variable. Second order positive thinking was reported to have a significant path to grades along with cognitive ability and gender.

Overall, research using structural equation modeling has produced a number of supportive findings for educational research. However, no research combines the constructs proposed in the current study into one possible model. Relationships exist between the constructs, providing additional support for the need to examine motivation, self-evaluations, and academic achievement together.

A Pilot Study

A pilot study was conducted by Raineri (2007, unpublished manuscript) which examined the relationships between ethnic identity, ethnicity, motivation, self- scales, and academic achievement. The study was conducted with 11th grade high school and 8th grade middle school (N=132; 67% racial minority, 33% Caucasian) students from a large school district in the

southeastern United States. The racial composition and number of economically disadvantaged students were examined at each school and the schools that were closest to the county average were selected to participate, with approval of the superintendent and principal.

Students completed a survey containing the following constructs: the academic domain items from the Domain Specific Hope Scale (Simpson & Snyder, 1997), the Life Orientation Test (Scheier & Carver, 1985) the achievement goals scale (Elliot & McGregor, 2001), Rosenberg Self-Esteem scale (Rosenberg, 1979), General Self-Efficacy scale (Sherer et al., 1982), Multigroup Ethnic Identity Measure (Phinney, 1992), and Other Group Orientation scale (Phinney, 1992). Additional demographic information was obtained along with the students' grade point averages as a measure of achievement.

The results indicated significant correlations between ethnic identity, efficacy, self-esteem, optimism, and mastery approach. Additionally, significant correlations were found between GPA and ethnicity, other group orientation, academic hope, and efficacy. Other significant correlations can be found on Table 1.

Independent t-tests revealed that Caucasian students reported lower scores on measures of ethnic identity, esteem, optimism, and mastery approach, yet had higher Grade Point Averages than students from other backgrounds ($p < 0.05$).

Table 1

Intercorrelations between Ethnicity, Ethnic Identity, GPA, and Measures of Self-Concept and Motivation

	Ethnicity	EthID	OtherGrp	Academic Hope	Efficacy	Esteem	Opt.	Mastery	GPA
Ethnicity	1								
EthID	-0.400**	1							
OtherGrp	-0.060	0.145	1						
Academic Hope	-0.032	0.169	0.221*	1					
Efficacy	-0.104	0.204*	0.193*	0.576**	1				
Esteem	-0.182*	0.293**	-0.118	0.138	0.391**	1			
Opt.	-0.173*	0.393**	-0.144	0.181*	0.414**	0.582**	1		
Mastery	-0.184*	0.212*	0.091	0.495**	0.316**	0.139	0.244**	1	
GPA	0.207*	0.093	0.193*	0.399**	0.263**	-0.034	0.017	0.133	1

**Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Regression analysis (See Table 2) suggested that of the constructs measured, academic hope appeared to be the strongest contributor to the prediction of GPA. Also, optimism was found to be the strongest contributor to the prediction of ethnic identity scores.

Table 2

Summary of Regression Analysis for Variables Predicting GPA and Ethnic Identity Scores

Variable	B	SE β	β
Model 1			
Ethnic Identity	1.163	1.508	0.072
Academic Hope	0.460	0.134	0.399
Efficacy	0.060	0.057	0.123
Self-Esteem	-0.192	0.154	-0.136
Optimism	0.000	0.159	0.000
Mastery Approach	-0.160	0.180	-0.089
Model 2			
Academic Hope	0.002	0.009	0.028
Efficacy	-0.001	0.004	-0.030
Self-Esteem	0.011	0.010	0.121
Optimism	0.025	0.010	0.286
Mastery Approach	0.012	0.011	0.107
GPA	0.005	0.006	0.074

Note. $R^2 = 0.197$ for Model 1 and $R^2=0.173$ for Model 2.

ANOVA statistics indicated significant main effects for mastery and efficacy on grades, $F(2,123)=2.81$, $P=0.050$ and $F(2,121)=7.96$, $p=0.001$, respectively.

In conclusion, the results of this research have replicated the findings of Roberts, et al. (1999) in terms of ethnic identity. It also supports claims of Graham (1994) as described by Schunk and Pajares (2005) that African Americans maintain positive feelings about themselves and their abilities regardless of academic performance. Structural equation modeling was also conducted to determine if there was a model supportive of the relationships between self-constructs, motivation and achievement. The self latent variable was defined by ethnic identity,

self-efficacy, and self-esteem; motivation was defined by mastery and optimism. Academic hope was also included in the model. Initially, it was proposed to be part of the motivation latent variable. However, suggested modifications resulted in the observed variable being part of the achievement latent variable along with grade point average.

Modifications suggested the addition of correlation coefficients between ethnic identity and self-efficacy, as well as optimism and hope. Model fit indices indicated significant findings for the chi-square ($\chi^2=14.8$; $p=0.097$) and GFI (GFI=0.96) measures. Additionally, other measures indicated a model approaching good fit (RMSEA=0.076; SRMR = 0.061). Thus, the described pilot study has implications for the proposed study in that it has examined the relationships among some of the major constructs proposed and can guide the researcher in theory and predicted outcomes.

CHAPTER 3

METHOD

The purpose of this study was to examine the relationships between motivation, self-evaluation, and academic achievement using structural equation modeling. The study attempted to determine if a single structural model was able to describe the relationships between the variables for the total sample. Then, the proposed model was to be examined for two separate samples (African American and Caucasian students) to determine if there were differences for the samples based on ethnicity. The following section discusses in detail the setting, participants, instruments, and procedures used in the current study in order to obtain the data to analyze and test the proposed research questions.

Setting

Data was collected in a large county of 324 square miles in the southeast region of the United States. The county has an estimated population of 199,486 individuals according to the U.S. Census Bureau (2009). Individuals within the county identified themselves as having the following ethnicities: 43.8% Caucasian, 52.2% African American, 0.3% American Indian, 1.6% Asian, 0.2% Pacific Islander, 1.9% two or more races, 2.9% Hispanic origin, and 41.9% White, non-Hispanic origin (U.S. Census Bureau, 2009). The median income was estimated to be \$36,944 and 23.9% of persons were reported to be living below poverty levels (U.S. Census Bureau, 2009). In terms of education, 78% of the population is individuals with a high school diploma or equivalent and 18.7% have a bachelor's degree or higher (U.S. Census Bureau, 2009).

District Information

The school district is a county-wide system that is comprised of students from a number of ethnicities. The student population is comprised of individuals with the following ethnicities: 73% African American, 1% Asian American, 2% Hispanic, 2% Mixed Race, and 22% Caucasian. Of the total district population, 67% of students are considered to be economically disadvantaged. The district is comprised of 8 high schools, 9 middle schools, 35 elementary schools, 3 magnet schools, 3 special schools, and 2 charter schools. The county has a high school graduation rate of 66% and a drop out rate of 6.4% for 9th through 12th grade students.

School Information

All of the schools that encompass 9th grade students were asked to participate in the current study. However, responses were only obtained from six schools after follow-up contact was made with the school administrators. Two of the participating schools were magnet schools, while the others were comprehensive high schools. The ninth grade had a total student enrollment of 3,063 for the spring of 2009 when initial participation was requested.

Table 3 provides an illustration of the schools' 9th grade population and percent of student ethnic groups and students classified as economically disadvantaged (i.e., those able to receive free or reduced lunch). Only five of the schools information is presented in the table. The sixth school that agreed to participate did so over the summer session. A total of 70 students enrolled in ninth grade literature class for the summer session. Because the students who participate in the summer program are from a variety of schools, the ethnic composition of the participants from this population could not be discerned, as the students indicated their home school on the survey. However, some of the students were from at least 4 high schools that did not respond during the initial data collection process.

Table 3

Participating schools' 9th grade populations and percentage of students identified as African American, Caucasian and economically disadvantaged compared to the county estimates

School	9 th grade Population	Ethnic Composition		Economically Disadvantaged
		African American	Caucasian	
School A	372	74%	21%	46%
School B	369	57%	37%	48%
School C	257	60%	33%	39%
Magnet A	156	70%	18%	44%
Magnet B	90	42%	46%	19%
COUNTY	3,063	73%	22%	67%

Participants

Two-hundred, ninety ninth grade high school students enrolled in a large suburban school district in the southeast United States completed the survey. Students from 10 different high schools participated. A total of 1,314 students were asked to contribute to the research by completing surveys in the 6 schools that agreed to participate. Of the 1,314 parental consent forms passed out and sent home, 313 (4%) were returned. However, only 290 of the students who returned the permission slips completed the survey. Due to the school district's ethnic composition, the participation results consisted of following percentages of ethnicities: 63% African American, 33% Caucasian, and 3% bi-racial or Asian American. Because the study was a comparison of African American and Caucasian students, the bi-racial and Asian American students' responses were not included in the analysis. Additionally, there was missing data from a number of participants. Participants whose responses were missing multiple items from one scale were omitted. Therefore, only 237 were able to be used in data analysis. The sample was 47% male (n=109) and 52% female (n=122). Students ranged in age from 12 through 19, with the

average age being 14 ($M=14.75$, $SD=0.78$). Table 4 summarizes the characteristics of the participant sample.

Socioeconomic status was coded into social class using the Standard Occupational Classification system (Livesey, n.d.), a nine category scale to measure class that took the place of the Registrar-General’s scale in the 1980’s. Using this system, reported parent and grandparent occupations were equated to the following social classes: 1 = Managers/Administrators, 2 = Professionals, 3 = Associate professionals/Technical, 4 = Clerical and Secretarial, 5 = Craft and related, 6 = Personal and Protective services, 7 = Sales, 8 = Plant and Machine Operative, and 9 = Other Occupations. Although the U.S. Bureau of Labor Statistics has revised this scale to include 23 groups, the original 9 group scale was used to make the analysis more interpretable as the expanded scale has slighter differences between the groups. Table 4 summarizes the social class statuses for the total sample, African American sample, and Caucasian sample.

Table 4

Comparison of sample sizes, gender composition, age, and social class status between the total, African American and Caucasian samples

	Total			African American			Caucasian		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Sample Size	231			144			78		
Male	109			67			39		
Female	122			77			39		
Age	231	14.75	.786	144	14.78	.823	78	14.70	.745
Social Class Status									
Mother	219	4.63	2.68	142	4.56	2.66	77	4.76	2.73
Maternal grandfather	94	6.58	2.60	47	6.61	2.48	47	6.55	2.74
Maternal grandmother	113	5.61	3.17	68	5.20	3.05	45	6.24	3.28
Father	199	5.70	2.54	119	6.13	2.40	80	5.06	2.63
Paternal grandfather	70	6.08	2.92	34	5.94	2.84	36	6.22	3.03
Paternal grandmother	71	6.08	3.12	35	5.22	3.04	36	6.91	3.00

Instruments

Students who had permission to participate were administered a survey. The survey included a place for students to list their age, gender, school, and parent and grandparent occupations. They also provided their name in order for GPA and Criterion Referenced Competency Test scores to be obtained by the researcher. The survey also included measures of academic hope, achievement goal orientation, self-efficacy (general and academic), self-esteem, and ethnic identity, which was not used in the data analysis (See Appendix A). The measures are described below with information about their reliability, validity, item composition, and scale. Table 5 illustrates the measures used, the possible total scores, and the latent variable it loaded on in the proposed model when applicable.

It should be noted that there were a significant number of missing responses for the General Self-Efficacy Scale, with only 119 of the 231 students responding to all items on the scale. Therefore, the scale was not used in future analyses. Instead, the Academic Self-Efficacy Scale was used, which has also been found to be a strong predictor of academic achievement as self-efficacy is a domain specific construct (Schunk & Zimmerman, 2006).

Table 5

Measures and their respective latent variables, scales, and total score ranges

Measure	Latent Variable	Scale	Total Score Range
Academic Hope	Motivation	1 to 8	9 to 72
Mastery Approach	Motivation	1 to 5	3 to 15
Mastery Avoidance	Motivation	1 to 5	3 to 15
Performance Approach	Motivation	1 to 5	3 to 15
Performance Avoidance	Motivation	1 to 5	3 to 15
Self Esteem	Self-Evaluation	1 to 4	10 to 40
Academic Self-Efficacy	Self-Evaluation	1 to 6	13 to 78
GPA	Achievement	---	0 to 100
CRCT scores	Achievement	---	650 to 950
General Self-Efficacy	N/A	1 to 7	17 to 119

Note. General Self-Efficacy was not used due to the number of participants with missing data.

Academic hope. Academic hope was measured using the nine items from the academic life area of the Domain-Specific Hope Scale - Revised developed by Shorey and Snyder (2004). This scale was a revision of the scale by Sympson and Snyder (1997) designed to measure the academic domain of hope. On this measure, individuals rate their feelings about each statement on a scale from 1 (definitely false) to 8 (definitely true). All items are focused on school work and the individual's abilities and motivation to complete academic tasks. Three of the items focus on assessing pathways, three on agency, and three on goals. A sample item from this scale is: "I am motivated to do well in school."

The reliability estimates for the academic domain of the original Domain Specific Hope Scale are around 0.89 in studies of undergraduate populations (Campbell & Kwon, 2001; Kwon, 2002; Snyder, 1997). Shorey and Snyder (2004) reported subscale reliabilities between 0.87 and 0.96. Total scores were used in analyses to compare the measure of academic hope to other constructs and achievement in order to determine Pearson correlations, or intercorrelations.

No research was found in a review of literature using the revised scale of domain specific hope. Further, little research has been conducted using the academic hope scale of the Domain Specific Hope Scale. Of the research available, the construct has appeared to be valid and positive for the future use of the academic hope scale; however additional research is needed to support the construct validity of the measure. Kwon (2002) examined the academic domain of hope in combination with the work domain and illustrated high internal consistency of 0.89 for the factor labeled achievement-oriented hope.

Achievement-oriented hope was investigated with the Beck Depression Inventory, Personal Style Inventory – Autonomy and Sociotropy, Beck Anxiety Inventory and Interpersonal Hope (a combination of the social, family-home, and romantic domains of hope). The

achievement-oriented measure of hope was significantly correlated with the Beck Depression Inventory ($r=-0.34$), Personal Style Inventory – Autonomy ($r=-0.18$), and Interpersonal Hope ($r=0.58$). Congruent analysis was also conducted to examine the effects of personal style and domain specific hope on depression. A significant main effect was found for achievement oriented hope ($\beta=-0.26$) on depression. Kwon (2002) noted that “the domains of hope appear to be capturing distinct situational differences in levels of hope” (p. 221). In other words, as the domains begin to be investigated, they are illustrating their usefulness and domain-specificity within the situation and context. The study by Campbell and Kwon (2001) also supports the construct validity of the academic domain of the Domain Specific Hope Scale. The reliability coefficient for the academic domain of hope with undergraduate students was 0.89.

Intercorrelations were reported for academic hope and a number of other measures including other domains of hope, the Defense Style Questionnaire, Beck Depression Inventory, Depression Proneness Rating Scale, Beck Anxiety Inventory, and the Social Adjustment Scale. Academic hope was positively, significantly correlated with the other measures domain specific hope as noted by their respective Pearson correlation coefficient: social relationships $r = 0.30$, leisure $r = 0.32$, family life $r = 0.41$, and total hope $r = 0.56$. Academic hope was negatively but significantly correlated with the Defense Style Questionnaire ($r = -0.17$), Beck Depression Inventory ($r=-0.45$), Depression Proneness Rating Scale ($r = -0.38$), Beck Anxiety Inventory ($r = -0.22$), and all areas of the Social Adjustment Scale ($r = -0.24$ to -0.47). Construct validity was supported through the correlations with the Social Adjustment Scale, as academic hope was most strongly correlated ($r = -0.47$) with the student work role area of social adjustment.

Goal orientation. Goal orientation was measured using an achievement goals scale developed by Elliot and Murayama (2008). The achievement goals measure includes 12 items

measuring the four approaches to achievement, three for each orientation, through a 2x2 achievement goals framework: mastery approach, mastery avoidance, performance approach, and performance avoidance. The scale was based on the original scale developed by Elliot and McGregor (2001).

The scale is a self-report measure in which individuals indicate the likelihood that the statement represents them ranging from 7 (very true of me) to 1 (not at all true of me). Sample items from the goal orientation scale include “It is important for me to do better than other students” and “I want to learn as much as possible for this class.” Items for each goal orientation are totaled to produce four scores, one for each orientation (mastery approach, mastery avoidance, performance approach, and performance avoidance). Each score can be interpreted separately and compared. For the purposes of this study, the entire scale was administered; however, the mastery approach and avoidance scores were used in examining relationships with other constructs and achievement because mastery goal orientation is most often related to positive academic outcomes (Anderman & Maehr, 1994; Anderman & Wolters, 2006; Elliott & Dweck, 1988; Ames & Archer, 1988; Dweck & Reppucci, 1973; Diener & Dweck, 1978; Sideridis, 2005; Mehlbach, 2006; Pekrun, Elliot, & Maier, 2006). Performance approach was also examined because it was highly correlated with the measures within the study and research indicates that in combination with mastery orientation, it is linked to achievement and result in positive, adaptive outcomes (Elliott, 1999; Harackiewicz, Barron & Elliott, 1998).

In the development of the Achievement Goal Questionnaire-Revised (AGQ-R), Elliot and Murayama (2008) compared the AGQ-R with the original Achievement Goal Questionnaire by Elliot and McGregor (2001). Reliability estimates (Cronbach’s alphas) were found to be between 0.84 and 0.94 for the approaches on the AGQ-R, compared to 0.83 to 0.92 for AGQ.

Specifically, the mastery approach goals had a Cronbach's alpha of 0.84, and the mastery-avoidance goals reliability estimate was 0.88. For the performance goals, approach-goals have a Cronbach's alpha of 0.92 and for avoidance-goals it was 0.94. The only significant difference from the AGQ was the performance-avoidance Cronbach alpha change from 0.83 to 0.94.

Intercorrelations of the achievement goal variables were also investigated. The mastery approach and avoidance goals had Pearson product moment correlation coefficients of 0.51, compared with previous correlations of 0.36. Performance approach and avoidance had a correlation coefficient of 0.68. Both were significant at the 0.01 level. Performance approach had a correlation of 0.16 with mastery-approach and a correlation of 0.15 with mastery-avoidance. Performance avoidance had correlations of 0.13 with mastery-approach and 0.46 with mastery-avoidance.

Self-esteem. Esteem was measured using the 10-item Rosenberg Self-esteem Scale (Rosenberg, 1979). This scale is a measure of global self-esteem. Global self-esteem is measured across two dimensions, negative and positive self-esteem. Sample items include, "I am able to do things as well as most other people" and "At times I think I am no good at all." The respondent rates each item on a four point likert scale ranging from "strongly disagree" to "strongly agree." An individual's score can range from 10 to 40, with 40 being the highest possible score of self-esteem. For the purposes of the current proposal, the total score will be used to determine relationships with other constructs, achievement, and race. Items will be analyzed to investigate if there are differences among ethnic groups.

The Rosenberg Self-Esteem scale has reliability estimates in the 0.80 range (Rosenberg, 1979). Conner and colleagues (2004) noted the Rosenberg Self-Esteem scale to be internally reliable with a Cronbach's alpha of 0.83 when examined with 6th through 12th graders. Other

researcher found it to have a reliability coefficient of 0.88 (Marcotte, Fortin, Potvin, & Papillon, 2002). In a study that examined test-retest of the RSE scale, reliability was found to be 0.85 after 2 weeks and 0.82 after one week (Fleming & Courtney, 1984).

Self-Efficacy. *Self-efficacy* was measured using the 17-item General Self-Efficacy scale developed by Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, and Rogers (1982). The general self-efficacy scale is a self report scale to measure overall feelings of self-efficacy, or beliefs about one's abilities to perform tasks. Individuals rate their agreement with the statement on a 7 point Likert scale ranging from very "strongly disagree" to "strongly agree". Sample items are, "Failure just makes me try harder," and "When I have something unpleasant to do, I stick to it until I finish it." The items on the self-efficacy scale are combined to produce a total score. The total score will be used in the proposed research in determining relationships between self-efficacy and other constructs, academic achievement, and racial differences.

Sherer and colleagues found the self-efficacy scale to have a reliability estimate in the 0.80 range. Additional research (Scherbaum, Cohen-Charash & Kern, 2006) which examined the General Self-Efficacy scale with other measures of general self-efficacy with college undergraduates found Sherer et al.'s (1982) measure to have a Cronbach's alpha of 0.88. Findings of correlation analysis conducted by Scherbaum and colleagues also noted that the General Self-Efficacy scale and other measures of general self-efficacy were all significantly and positively correlated with one another. It was further noted in this study that item analysis indicated the General Self-Efficacy scale is more useful for individuals with average to below average levels of self-efficacy. Overall, the findings by Scherbaum and colleagues (2006) support the validity and use of the General Self-Efficacy scale.

Academic Self-Efficacy. Academic self-efficacy was measured with 7 items from the Self-Efficacy for Self-Regulated Learning and 6 items from the Self-Efficacy for Academic Achievement scales as noted in Zimmerman, Bandura, and Pons (1992). A total self-efficacy score was calculated by adding the scores of each item together. The total score ranged from 17 to 68. Higher scores indicated higher levels of academic self-efficacy.

According to Zimmerman, Bandura, and Martinez-Pons (1992) both self-efficacy scales are reliable, with Cronbach alphas of 0.87 and 0.70, respectively. The scales were intercorrelated with a Pearson correlation coefficient of 0.51. The scale for academic achievement was also found to be significantly correlated with prior grades (0.22, $p < 0.05$) and final grades (0.23, $p < 0.05$) within the study.

Academic achievement. Academic achievement was measured by GPA and students' standard scores from the Reading, English/Language Arts, and Math portions of the Georgia Criterion Referenced Competency Tests (CRCT; Georgia Department of Education, 2008) taken in eighth grade. GPA was obtained from the school system's data system that tracks students' grades, attendance, and schedules by the researcher. The grade point average used to measure achievement was the students' cumulative high school GPA available at the end of the 2009 fall semester.

CRCT scores were obtained from student records housed in a secure data server by the researcher. The CRCT is state administered test which measures students' acquisition of skills and knowledge required by the Performance Standards taught throughout the school year. The CRCT provides information concerning academic achievement at the student, class, and school and state level. It can be used to determine students' personal strengths and weaknesses within and across subject areas. It is measured on a scale from 650 to 950. Scores are coded into three

different levels: Does Not Meet Standards, Meets Standards, and Exceeds Standards. A score of 800 is required to classify a score as meeting the standards. A score of 850 and higher is considered to be exceeding the standards and scores below 800 indicate the student did not meet the standards. Total scores of 800 or higher on the Reading and Math portions of the CRCT are required to be promoted when students are in the fifth and eighth grades. Therefore, these scores were used in the data analysis. Additionally, the English/Language Arts score was used as it is one of the main subject areas that is necessary for success in other areas of achievement. A summary of the percent of students who obtained scores in each category for the 2008-2009 school year (Georgia Department of Education, 2009) are presented in Table 6.

Table 6

School district results of CRCT scores for the percentage of all 8th grade students and by African American and Caucasian populations for the 2008-2009 school year

	Does Not Meet	Meets	Exceeds
All Students			
Reading	9%	71%	20%
English/Language Arts	13%	69%	18%
Math	39%	51%	10%
African American			
Reading	10%	76%	14%
English/Language Arts	14%	72%	14%
Math	45%	49%	6%
Caucasian			
Reading	7%	56%	37%
English/Language Arts	10%	61%	28%
Math	22%	58%	21%

Demographic information. Demographic information including age, gender, parent and grandparent occupations, and ethnicity/race were reported. Parent and grandparent occupations were obtained in order to determine social class and examine any significant differences between ethnicities to rule out socioeconomic status as a possible confounding factor. Occupations were

coded into one of nine categories of the Standard Occupational Classification system, one of many classification systems used to classify social class. The following are the nine social classes based on occupations: 1 = Managers/Administrators, 2 = Professionals, 3 = Associate professionals/Technical, 4 = Clerical and Secretarial, 5 = Craft and related, 6 = Personal and Protective services, 7 = Sales, 8 = Plant and Machine Operative, and 9 = Other Occupations.

Procedure

Permission to Conduct the Study

Approval to conduct the proposed research study with human subjects was obtained from the Institutional Review Board at the University of Alabama (See Appendix B) on February 20, 2009. The IRB described in detail the purpose of the study and the procedures that were used to conduct the study. It described the survey and the process for obtaining permission for conducting the research in the school district and the schools themselves. Background information was presented to provide the review board with a description of past findings that led to the formulation of the proposed study. The subject population was described as students in the ninth grade. The schools within the county were listed as the locations in which the researcher was going to recruit participants. Participants were to include individuals of any age, ethnicity, and gender in the ninth grade attending school within the district. Recruitment procedures were also defined within the IRB.

Student risks and benefits were stated in the IRB, with no major risks involved. It was noted that participation was voluntary and there were no personal benefits for participating. Procedures to maintain confidentiality were discussed as well as the process for obtaining parental consent (Appendix C) and student assent (Appendix D) for participation. Finally, attachments were submitted containing consent forms, the survey, and student assent.

After the researcher secured approval from the University of Alabama Internal Review Board, permission was obtained by the researcher through the school district using county procedures. The county requires the submission of the researcher's approved proposal from the university, as well as, IRB approval status, and completion of the Research Request Packet. The Research Request Packet includes information about the applicant (i.e., lead investigator), university information, and costs and benefits to the participants and school district (i.e., proposed participants, demands on participants, privacy protection, and benefits). Additionally, a copy of the scales to be used and a résumé of qualifications were submitted. Approval was granted for research to be conducted on February 25, 2009 (See Appendix E).

Following approval by the school district, school administrators were contacted by the researcher in order to obtain permission for their schools to participate. Initial requests for participation were sent via electronic mail. When a principal responded, a date and time for a conference was established in order to work out all of the procedures for administration at the school. If principals did not respond, phone contact was attempted. On some occasions, the principal did not respond to any of the attempts.

Once the principal or administrator agreed to allow the school to participate, an informed consent for administrators (See Appendix F) was signed by the principal. The principal or administrator then gave contact information for the teachers that the researcher could work with in order to distribute the permissions and surveys. In all cases, these were either math or language arts teachers.

Sampling Strategy

Ninth grade students from all participating schools were asked to participate. However, the research was conducted in regular education classrooms. Therefore, students who are in a

self-contained setting or attend pull-out classes for Language Arts or Math may not have participated. This procedure attempted to account for students who may not be able to read the items on the survey. If a student that was in the general classroom was not able to read the items, someone was allowed to assist that student. This did not occur during administration.

The county has 10 high schools total (8 comprehensive and 2 magnets). All schools were asked to participate. However, permission for participation was only obtained from 6 schools. Five of these schools were similar in ethnic composition to the county estimates. However, they all had a smaller percentage of students considered to be economically disadvantaged than the county's 67%. The sixth school volunteered to participate during the summer session. Summer session allows for any student wishing to earn credits for a class they failed to participate. Therefore, students from a number of non-participating schools took part in the research project.

Informed Consent from Parent and Student

Students were asked to participate in the research project by the researcher or the teacher through their Language Arts or Math class, depending on what the principal preferred and indicated to the researcher. It was not possible for the researcher to speak to each 9th grade class as the researcher would have to remain at one school all day in order to address each Math or Language Arts class. Therefore, a script was used when the teacher was presenting the information about the research to the students (See Appendix G). Students were presented with a general overview of the study in their Language Arts or Math class by the researcher or the classroom teacher. Students were told what demographic information was requested and were told that the survey was concerning their academic achievement and the factors that they feel impact their thoughts, beliefs, and performance in the classroom. Students were told that participation in the study was strictly voluntary and if they agreed to participate they could quit

at any time without penalty. They were told that it would take no longer than 30 minutes to complete the survey. It was stated that there were no direct benefits to participating, but that the information provided would contribute to current literature and research within the area of education.

Students were then given parental consent form, which contained the information reviewed with them, to take home and have signed if they wished to participate. A total of 1,314 parental consent forms were administered. Three hundred, thirteen forms were returned for a response rate of 4 percent. Students were required to return the consent forms to the teacher. The teacher then returned all of the parental consents to the researcher so that the appropriate number of surveys could be administered to the students. If a student returned the parental consent form, they were then asked to sign a student assent form at the time of the survey administration by the teacher or researcher, whoever was administering the survey. Only 290 of the 313 students completed the survey after returning their consent forms. This was done to reduce the amount of paper waste if students did not return the parental consent forms.

Administration of the Survey and Completion by the Students

After confirming participation with the principal and establishing the procedures for administration based on the school preference, the researcher provided the students who had permission to participate with a student assent and the survey directly (n=44) or via the teacher (n=246). The survey was presented in paper-pencil format and took no longer than thirty minutes. Teachers who administered the survey were asked to read the instructions presented in a script developed by the researcher (See Appendix H). All responses were confidential and kept in a locked cabinet in the researcher's office. The survey included the academic items from the Domain Specific Hope Scale – Revised (Shorey & Snyder, 2004), Rosenberg Self-Esteem Scale

(Rosenberg, 1979), General Self-Efficacy Scale (Sherer, et al, 1982), Achievement Goal Questionnaire - Revised (Elliot & Murayama, 2008), items from the Self-Efficacy for Self Regulated Learning and Academic Achievement scales (Zimmerman, Bandura, Martinez-Pons, 1992), and the Multigroup Ethnic Identity Measure (Phinney, 1992), as well as some demographic questions.

The students then had the opportunity to complete the survey during their class. There were typically 20 to 30 students per class. In four of the six schools, the teacher preferred to administer the survey at a time convenient for them during the class period due to their teaching schedule. Therefore, parental consent forms were sorted by teacher and the respective number of surveys and assent forms were given to the teachers by the researcher. Student names were placed on the surveys so that only students who had parental consent were allowed to participate. The teacher was also given a short script (See Appendix H) they were to read when administering the survey. Students then completed the survey and returned them to the teacher. The teacher provided the researcher with a day and time to pick up the completed surveys. In most cases, the teacher asked for a week to administer and collect the surveys due to class time constraints. A total of 224 students completed the survey under this procedure.

At one school, the principal asked that instruction not be disrupted and students who wished to participate may do so, but not during class time. So, students were asked by their teacher to take the survey home and return it on a specified day. Students who returned the parental consent forms were identified and their name was placed on a student survey and assent form. The surveys and assent forms were then taken to the school and given to the students' respective teachers. The teachers passed out the surveys and assents to the approved students. The students then took the surveys home and were allotted three days to complete and return the

assent form and the survey. The researcher returned on the third day to collect completed information. A total of 31 students completed and returned surveys from this school.

As noted previously, one school agreed to participate during the summer session. During the summer session, the teachers provided the researcher with a time that the students had a break from instruction. The researcher was asked to come in at that time and present the survey to the students for completion. This was done for the two teachers that instructed Language Arts classes and included 44 of 70 students. For one teacher, that time was at the beginning of class (i.e., approximately 7:45am) and for the other it was mid morning (i.e., about 10:30). Students who did not participate in the survey had work to complete for the class for the early morning session. While for the later class, students were given free time to take a break, read, use the restroom, or get a snack.

Preparation of Survey Responses for Data Analysis

After all the student surveys were collected by the researcher, achievement data was gathered on each student. In order to do this, the researcher had to access each student's file on two separate databases to obtain the student's cumulative high school GPA and the student's Reading, English/Language Arts, and Math CRCT scores from the 8th grade. After obtaining the students' achievement scores, the researcher assigned participant numbers to each survey and removed the student names from the survey responses. All of the responses and information provided by the students on the surveys were entered into an excel file by the researcher. Students provided their responses through paper-pencil administration. Therefore, the researcher had to enter the students' responses as they appeared on their surveys. The researcher reviewed the responses for each scale to ensure accuracy. The data was then exported into SPSS in order for data analysis to be completed.

Analysis

The following section provides a description of the specific analyses conducted to complete the research study. It reviews the procedures used to identify an appropriate data set. Additionally, it discusses the statistical analyses that were conducted prior to SEM analysis in order to determine if the scales were reliable and correlated. Other analyses are also described that examined the data for any possible confounding factors. Finally, the procedures for SEM are described.

Data Cleaning

Before computing descriptive statistics, student responses were evaluated for missing data. Students who failed to complete an entire scale or were lacking multiple responses on a scale (i.e., more than one item per scale) were removed before analysis. Additionally, responses for any participant who did not have multiple achievement scores were also removed; that is, if the student did not have CRCT scores in more than one area or was lacking a GPA in addition to missing CRCT results. After initial data cleaning, it was determined that the remaining participants only had items missing randomly throughout the population subsamples and no more than one item was missing per scale. Therefore, maximum likelihood estimation statistics using the EM algorithm in the SPSS Missing Values option were computed in order to determine the possibility of using a substitution method for missing variables. With inserting the missing values conservatively for the entire population, that is, only using the estimation technique on a relatively small number of participant responses, the sample size did not increase significantly. Using a sample with missing data and inserting means increased the Caucasian sample from 78 to 85 and the African American sample from 144 to 147. Therefore, since the sample sizes could

not be significantly increased, it was determined that it would be best to use a smaller sample with no missing data than to risk over-correction and possible modeling errors due to estimation.

Preliminary Statistical Analysis

Using SPSS, descriptive statistics were computed for all of the variables. Reliability estimates (Cronbach's alpha) were computed for the scales used in the survey, as well as Pearson product moment correlations (intercorrelations) between the variables used in the survey. Multivariate Analyses of Variance (MANOVAs) were conducted in order to determine the appropriateness of the sample. For the sample to be appropriate it would have similar numbers of African American and Caucasian students compared to the county and there would not be significant differences between samples on the measures that might be inconsistent with previous research. A MANOVA was conducted to determine if there were any significant differences between the African American and Caucasian students (with ethnicity as the independent variable) for socioeconomic status. A second MANOVA was conducted with gender and ethnicity as the independent variables and the total scores for each measure and achievement as the dependent variables. A final MANOVA was conducted to determine if there were between school effects for magnet compared to comprehensive high schools.

Testing the Models

Structural equation modeling (SEM) techniques were conducted using the LISREL 8.54 Student Edition program. SEM is a statistical method used to assist in confirming and disconfirming models using measurement instruments because it accounts for measurement error (Schumacker & Lomax, 2004). When conducting SEM, it is necessary to first test the measurement models and establish that the fit indices are acceptable. According to Jöreskog and Sörbom (1993), the following are the acceptable levels for each fit criterion: Normal Theory

Weighted Least Squares Chi-Square (χ^2) near zero with and p-value greater than 0.05, Root Mean Square Error of Approximation (RMSEA) less than or equal to 0.05, Standard Root Mean Square Residual (SRMR) less than 0.05, Goodness of Fit Index (GFI) greater than or equal to 0.95, and Adjusted Goodness of Fit Index (AGFI) greater than or equal to 0.95.

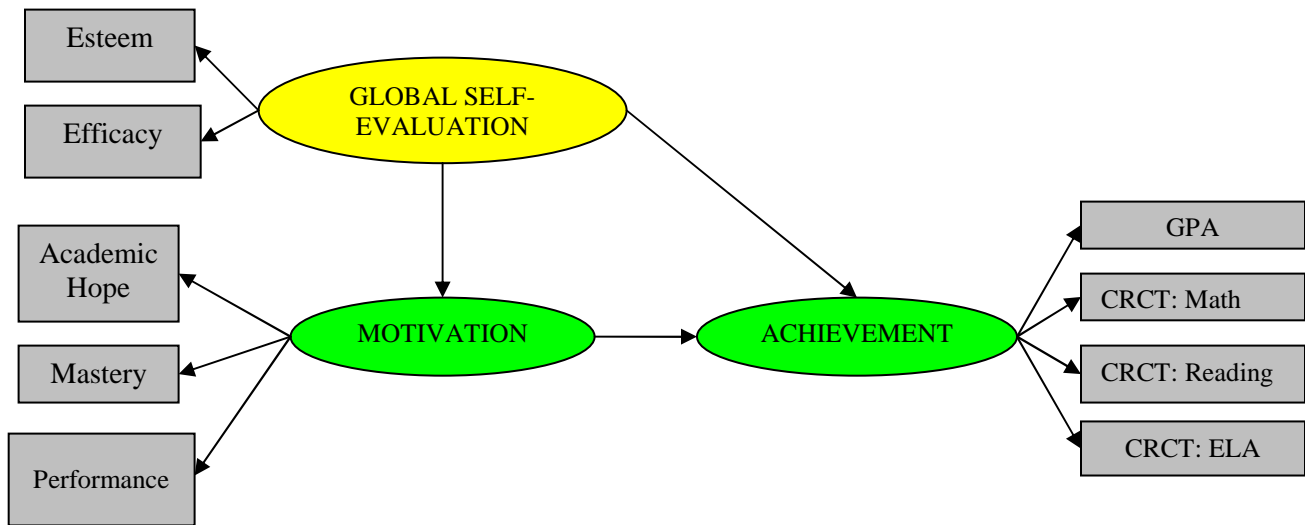


Figure 1. Proposed model of relationships between global self-evaluation, motivation, and academic achievement as measured by their respective observed variables.

Research Question 1

Will the single model depicted in Figure 1 define the relationships (pathways) between the latent variables of motivation, global self-evaluation, and academic achievement for all students?

Measurement models. In order to determine if the proposed model defines the relationships between the latent variables and the observed variables for the total sample, the following variables were combined: self-esteem and self-efficacy to create the latent variable global self-evaluation, mastery- and performance-approach and avoidance orientations and

academic hope were combined to construct the latent variable motivation, and grade point average and CRCT scores were combined to form academic achievement. Each of these formed a measurement model that was tested for goodness-of-fit by examining the following fit indices: Normal Theory Weighted Least Squares Chi-Square (χ^2) and p-value, Root Mean Square Error of Approximation (RMSEA), Standard Root Mean Squared Residual (SRMR), Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI). Indices are suggested to have met fit standards with the following values: χ^2 near 0 with $p > 0.05$, $RMSEA \leq 0.05$, $SRMR < 0.05$, $GFI \geq 0.95$, and $AGFI \geq 0.95$ according to Jöreskog and Sörbom (1993). Additionally, for the observed variables, the t-values were examined for significance (± 1.96) and the strength of the R^2 coefficients was examined. Similar to correlation coefficients, a small R^2 value (0.0 – 0.30) indicates a low value and a higher value (0.50 – 0.99) suggests a moderate to high strength.

As summarized in Chapter 4, modifications were suggested by the LISREL program as the measurement models as analysis was conducted. The program made suggestions to add covariances between observed variables or paths between an observed variable and another latent variable. Within each measurement model, one of the observed variables was selected to have a factor loading set to one based on the R^2 value and the strength of the initial factor loading. As each measurement model was determined to be fit, the measurement models were combined. The LISREL program continued to supply the researcher with modification suggestions. Modifications were made based LISREL suggestions, the standardized residuals produced by the program, and theoretically appropriate relationships between the variables in the model.

Structural models. Once a measurement model was established, the structural relationships were entered into the PRELIS syntax. A path was created from both the motivation and the global self-evaluation latent variables to the academic achievement latent variable.

Another path was created from global self-evaluation to motivation, as proposed. The LISREL program was then run again to test the model with the proposed structural paths. When a model diagram could not be produced and warnings were given by the program, the model was determined to be not feasible. Therefore, modifications had to be made in order to resolve the problems. Modifications were made to the structural model based on the statistics produced and the theoretical background of the variables. After determining the fit of the proposed model, alternative models were explored.

Research Questions 2 and 2a

When examined separately, what are the similarities and differences in the fit of the proposed model (See Figure 1) between the African American sample and the Caucasian sample? If the model differs in terms of fit for the African American and Caucasian samples, where are the differences?

Measurement models. Similar to the procedures for data analysis in research question 1, measurement models were constructed and tested first to determine whether the path coefficients of the observed variables were contributing equally to the latent variable. For each observed variable, the researcher examined *t*-values for significance and squared multiple correlations (R^2) for moderately high values to ensure the instrument measured the intended construct. A measurement model was then created for the samples. In following previous SEM research that compares two samples, this model was identified as the null model, which is also a measurement model.

The null model is identified before any modifications are made in order to determine a base model to compare future models to. When comparing a null model to a modified model, the Normmed Fit Index (NFI) of each model was compared to the null model NFI to determine if a

significant difference was made and the model was improving. Additionally, for each model, fit indices including the Normal Theory Weighted Least Squares Chi-Square (χ^2) and p-value, Root Mean Square Error of Approximation (RMSEA), Standard Root Mean Squared Residual (SRMR), Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI) were investigated to determine the data-to model fit of the measurement model for each sample.

The LISREL program output produced suggested modifications including adding covariances between observed variables and paths from observed variables to latent variables. The researcher examined the proposed modifications as well as the standardized residuals to determine the best modifications that could be made for both samples. The models were tested for both samples until good fitting measurement models were confirmed for both samples. A number of modifications were made in order to produce a good data-to-model fit for the African American and Caucasian samples.

As each model was modified, the results for the African American and Caucasian samples were compared in order to illustrate the similarities and differences between the models. At the measurement model level, factor loadings, squared multiple correlations, and t-values were examined for the observed variables. The relationships between the latent variables were observed. Finally, the fit indices (χ^2 , RMSEA, SRMR, GFI, AGFI, and NFI) for the African American and Caucasian models were examined and compared.

Structural models. Once a measurement model was confirmed for both samples, the structural model was tested for both samples to ensure fit. Directional paths were placed between the latent variables to form the structural model. Based on the proposed model, a path was created from both the motivation and the global self-evaluation latent variables to the academic achievement latent variable. There was also a path created from global self-evaluation

to motivation. The models were tested again. As models were unable to be produced and warnings were provided by the LISREL output, modifications had to be made to the syntax. As each modification was made, the model fit indices including χ^2 , RMSEA, SRSM, GFI, AGFI, and NFI were examined. After determining the results for the proposed model, alternative models were tested based on theoretical perspectives suggesting possible misspecified measurement models.

CHAPTER 4

RESULTS

The purpose of the current research was to determine if the proposed model would describe the relationships between the latent variables of motivation, self-evaluation, and academic achievement for the total sample. The research also attempted to determine if, when examined separately, the proposed model fits for the African American and Caucasian samples and if there are differences and similarities between the models. The research was conducted with a sample of ninth grade students from a large school district in the southeast region of the United States. In order to address the research questions, students were administered a survey that included demographic information and measures of academic hope, goal orientation, self-esteem, and self-efficacy. Academic achievement measures were obtained from databases that contain student grades and state test results (CRCT scores).

In order to analyze the data collected, a number of statistical procedures were used. Cronbach alpha reliability coefficients were calculated to estimate internal consistency. Pearson correlation coefficients (intercorrelations) were estimated in order to make statistically sound, as well as theoretically correct, decisions in model modification during SEM analysis. Ethnic and gender differences were examined using Multivariate Analysis of Variance procedures as well as socioeconomic status in order to check the sample for any possible confounding factors. Finally, Structural equation modeling (SEM) with the LISREL 8.54 program was used to define measurement and structural models for the total sample first.

Then single sample analyses for both ethnic groups was conducted to compare the measurement and proposed structural models for each sample by examining the fit indices, factor loadings, R^2 coefficients and t-values.

Descriptive Statistics

A total of 290 high school students were surveyed from a large school district in the southeast. Of this population, 63% were African American, 33% were Caucasian, and 3% identified themselves as bi-racial or Asian American and were not included in the analysis. However, missing data required the removal of some participant data from the sample. Therefore, the total sample analyzed was comprised of results from 231 students. Means and standard deviations for each measure used in the survey are presented in Table 7 according to the total sample, African American sample, and Caucasian sample.

Table 7

Means and standard deviations for the measures by sample

Measures	Total ^a		African American ^b		Caucasian ^c	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Academic Hope	55.43	10.27	55.93	9.84	54.44	11.29
Mastery Approach	12.73	2.54	12.83	2.65	12.50	2.37
Mastery Avoidance	10.04	3.58	9.99	3.83	10.10	3.17
Performance Approach	12.18	2.64	12.43	2.61	11.69	2.67
Performance Avoidance	11.58	3.15	11.69	3.31	11.42	2.94
Self-Esteem	32.04	6.25	32.19	6.27	31.08	6.48
Academic Self-Efficacy	58.07	10.39	59.09	9.87	55.85	11.38
GPA	78.61	9.97	77.95	8.83	79.15	11.52
ELA CRCT	829.75	32.36	824.76	29.77	835.97	34.96
Math CRCT	810.45	33.90	803.38	28.02	818.23	33.73
Reading CRCT	827.68	25.17	822.15	20.61	836.24	29.69

Total: ^an = 231. ^bn = 144. ^cn = 78

The means and standard deviations appear to be similar to the results of previous research for goal orientation, academic hope, and self-esteem. Specifically, for the goal orientation scale, the measure totals are presented in Table 7, however, individual goal means were calculated. It was determined that the means for the goals by type were: mastery-approach 4.25, mastery-avoidance 3.39, performance-approach 4.10, and performance-avoidance 3.87. These results are similar to the means found by Elliot & Murayama (2008) which were 4.23, 3.61, 4.05, and 3.83 respectively. Previous research on academic hope indicated mean scores of 48.12 (Kwon, 2002), a score that is somewhat lower than the results of the current study; however, the current study is using a revised version of the scale which has little research published explaining the technical qualities of the scale including the scale means. In terms of self-esteem, the item average was 3.19, slightly lower than a study reviewing the wording of the items on the Rosenberg Self-Esteem Scale indicating a mean item score of 4.65 (Greenberger, Chen, Dmitrieva, & Farruggia, 2000).

As noted previously, when examining the responses of students, it was determined that there were a significant number of missing responses for the General Self-Efficacy Scale, with only 119 of the 231 students responding to all items on the scale. Therefore, the scale could not be used in SEM analysis. Therefore, statistics for this measure are not presented in the results section. Instead, the Academic Self-Efficacy Scale was used, which has also been found to be a strong predictor of academic achievement as self-efficacy is a domain specific construct (Schunk & Zimmerman, 2006).

Intercorrelations

Pearson product moment correlations were produced using SPSS to determine the consistency of the variables with previous research. Tables 8 – 10 provide intercorrelations for

the observed variables considered for use within the study for the total sample, African American sample, and Caucasian sample respectively. The correlations will assist in modification decisions in the process of conducting structural equation modeling in that if a decision needs to be made about whether two observed variables should be related, the research can reference the intercorrelations for the specified population to determine if that correlation would be appropriate.

Academic self-efficacy and achievement scores were positively correlated as previously found (Hackett, Betz, Casas, & Rocha-Singh, 1992). As general self-efficacy and hope were positively correlated in previous research (Magaletta & Oliver, 1999), the domain specific measures are significantly and positively correlated in the present study as expected. The measures of goal orientation were positively correlated with one another as previously noted by Elliot and McGregor (2001) and Elliot and Murayama (2009). Additionally, mastery- and performance- approach goals were significantly correlated with measures of achievement, which is consistent with previous research (Elliot, 1999; Elliot & Murayama, 2008; Harackiewicz, et al., 1998; Melbach, 2006; Tanaka & Yamauchi, 2000; Urdan, 2004) as well as self-efficacy (Anderman & Wolters, 2006; Bong, 2009). Finally, hope was found to have significant, positive correlations with goal orientation (Magaletta & Oliver, 1999; Snyder, et al., 1991) and academic achievement (Lopez, et al., 2000; McDermott & Snyder, 2000; Snyder, et al., 1991).

Self-esteem was significantly related to academic hope (Snyder, et al., 1991), academic self-efficacy (Bandura, 1977; Baumeister, et al, 2003; Judge, et al., 2002), and mastery- and performance-approach goals (Archer, 1994; Diener & Dweck, 1978; Malpass, O'Neil, & Hacevar, 1999) for the total sample. There were some differences in the relationships for self-esteem when the Caucasian and African American samples were examined separately. Self-

esteem was significantly, positively correlated with academic hope, self-efficacy, and mastery-approach for the Caucasian sample; whereas, it was significantly and positively correlated with reading achievement, mastery-approach and performance-approach for the African American sample.

One unexpected finding was the significant positive correlations between mastery-avoidance and performance-avoidance with measures of academic achievement (i.e., GPA) for all samples (total = 0.138 and 0.248; African American = 0.187 and 0.226; Caucasian = 0.268 for performance avoidance). These correlations are most often negative and not significant (Elliot & Murayama, 2008). Therefore, the results for this sample may not be generalizable to other populations considering such different findings in terms of these specific measures.

Internal consistency

Cronbach alpha reliability coefficients were produced by SPSS for each measure to provide measures of internal consistency. Reliability coefficients were estimated for the total sample, African American sample, and the Caucasian sample in order to determine if there were differences in how reliable the measures are for different ethnicities in comparison to previous research. Results of internal consistency tests are provided in Table 11. The resulting reliability coefficients are consistent with previous research, as noted in Chapter 3. For the African American sample and the Caucasian sample, as well as the total sample, the reliability estimates were in the moderate to high ranges. The best reliabilities were found for academic hope, mastery approach, academic self-efficacy, and self-esteem. However, mastery avoidance, performance-approach, and performance-avoidance all had moderate reliability coefficients and were consistent with past findings.

Table 8

Intercorrelations between observed variables for the total sample (N=231)

	1	2	3	4	5	6	7	8	9	10	11
1. GPA	1										
2. Math CRCT	.637**	1									
3. Reading CRCT	.586**	.673**	1								
4. ELA CRCT	.647**	.778**	.777**	1							
5. Academic Hope	.357**	.200*	.223**	.202**	1						
6. Academic Self-efficacy	.301**	.146*	.142*	.156*	.671**	1					
7. Mastery Approach	.437**	.257**	.279**	.291**	.513**	.555**	1				
8. Mastery Avoidance	.138*	.152*	.124	.181**	.198**	.258**	.274**	1			
9. Performance Approach	.352**	.191**	.286**	.213**	.435**	.461**	.670**	.311**	1		
10. Performance Avoidance	.248**	.199**	.175**	.223**	.295**	.256**	.412**	.512**	.391**	1	
11. Self-Esteem	.068	-0.21	.105	.058	.176**	.212**	.241**	-.030	.232**	.109	1

Note. GPA = Grade Point Average; CRCT= Criterion Referenced Competence Tests (Georgia DOE, 2008); Academic Hope = 9 items from the Domain Specific Hope Scale – Revised (Shorey & Snyder, 2004); Self-esteem = Rosenberg Self-Esteem Scale (Rosenberg, 1979); Mastery Approach, Mastery Avoidance, Performance Approach and Performance Avoidance = Achievement Goal Questionnaire - Revised (Elliot & Murayama, 2008); Academic Self-Efficacy comprised of items from the Self-Efficacy for Self Regulated Learning and Academic Achievement scales (Zimmerman, Bandura, Martinez-Pons, 1992)

*p < 0.05 and **p < 0.01

Table 9

Intercorrelations between observed variables for the African American sample (N=144)

	1	2	3	4	5	6	7	8	9	10	11
1. GPA	1										
2. Math CRCT	.659**	1									
3. Reading CRCT	.590**	.682**	1								
4. ELA CRCT	.640**	.737**	.757**	1							
5. Academic Hope	.304**	.188*	.164*	.098	1						
6. Academic self-efficacy	.237**	.111	.074	.093	.621**	1					
7. Mastery Approach	.438**	.301*	.309**	.335**	.504**	.542**	1				
8. Mastery Avoidance	.187**	.224**	.155	.232**	.164*	.228**	.255**	1			
9. Performance Approach	.335**	.232**	.277**	.201*	.466**	.505**	.684**	.357**	1		
10. Performance Avoidance	.226**	.262**	.205*	.262**	.214*	.201*	.353**	.582**	.370**	1	
11. Self-Esteem	.149	.117	.183*	.128	.139	.155	.261**	-.021	.309**	.132	1

*p < 0.05 and **p < 0.01

Table 10

Intercorrelations between observed variables for the Caucasian sample (N=78)

	1	2	3	4	5	6	7	8	9	10	11
1. GPA	1										
2. Math CRCT	.622**	1									
3. Reading CRCT	.582**	.706**	1								
4. ELA CRCT	.643**	.850**	.785**	1							
5. Academic Hope	.424**	.288*	.314**	.349**	1						
6. Academic Self-efficacy	.400**	.242*	.299**	.273*	.743**	1					
7. Mastery Approach	.429*	.217	.292**	.223*	.516**	.571**	1				
8. Mastery Avoidance	.047	.048	.059	.070	.254*	.324**	.320**	1			
9. Performance Approach	.283*	.144	.174	.182	.440**	.376**	.568**	.365**	1		
10. Performance Avoidance	.375**	.212	.391**	.273*	.353**	.352**	.620**	.227*	.449**	1	
11. Self-Esteem	.079	.007	.089	.061	.285*	.346**	.291*	-.058	.153	.140	1

*p < 0.05 and **p < 0.01

Table 11

Cronbach alpha reliability coefficients for the measures in the survey

Measures	Total Sample ^a	African American ^b	Caucasian ^c
Academic Hope	.840	.826	.866
Mastery Approach	.773	.801	.695
Mastery Avoidance	.644	.705	.500
Performance Approach	.671	.683	.602
Performance Avoidance	.672	.698	.639
Academic Self-Efficacy	.847	.828	.869
Self-Esteem	.849	.834	.890

^an = 231. ^bn = 144. ^cn = 78.

Socioeconomic Status Coded by Parent and Grandparent Occupations

A MANOVA was conducted with ethnicity as the between subjects factor to detect any significant differences present for parent and grandparent occupations. Before presenting the results, it is important to note that only 35 individuals' responses from the total sample (15 from the African American sample and 20 from the Caucasian sample) were able to be used based on list-wise deletion of items performed by the multivariate general linear model function of SPSS.

A statistically significant difference was indicated by ethnicity, Wilks' $\Lambda = 0.639$, $F(6, 28) = 2.632$, $p < 0.05$. Power to detect the effect of ethnicity was 0.767; Box's M was not significant. There was only one statistically significant difference for ethnicity and that was for father's occupation, $F(1, 35) = 11.694$, $p < 0.05$, partial eta squared=0.262 and power=0.913.

Table 12 illustrates the means and standard deviations for socioeconomic status, as it was coded for social class status according to the Standard Occupational Classification system, by sample.

This finding suggests that there was a significant difference in the social class status of the Caucasian fathers compared to the African American fathers.

This finding should be taken into consideration when interpreting the results of SEM analysis, as socioeconomic status could be a contributing factor to differences in the models. For the present study, this measure was not included in the proposed structural model due to poor response to the items measuring SES, with a useable sample size of 35 after SPSS conducted list-wise deletions, as noted above. However, future research should continue to consider SES.

Table 12

Means and standard deviations of social class status by total, African American, and Caucasian samples

Social Class Status	Total Sample ^a		African American ^b		Caucasian ^c	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Mother	4.42	2.81	4.46	2.99	4.40	2.74
Maternal grandfather	7.08	2.16	6.73	2.54	7.35	1.84
Maternal grandmother	5.82	3.26	5.40	3.26	6.15	3.31
Father	4.65	2.87	6.33	2.38	3.40	2.60
Paternal grandfather	5.80	3.34	6.06	3.55	5.60	3.25
Paternal grandmother	6.05	3.22	5.40	3.15	6.55	3.26

^an = 35. ^bn = 15. ^cn = 20.

Ethnic and Gender Differences

A MANOVA was conducted to with ethnicity and gender as the between subjects factors to detect any significant differences present for the measures used in the present survey (See Tables 13 and 14, respectively). Checking for significant differences within the sample reduces the possibility of errors in interpretation of the data and presents potential limitations.

Statistically significant differences existed by ethnicity as Wilks' $\Lambda = 0.843$, $F(11, 208) = 3.514$, $p < 0.01$, and gender with Wilks' $\Lambda = 0.878$, $F(11, 208) = 2.619$, $p > 0.01$. Power to detect the

effect of ethnicity was 0.995 and power for gender was 0.968. Therefore, although Box's M is significant, most likely due to unequal sample sizes, the power in the effect should account for any error. Especially since, when tested at a significant level of 0.001, there were still significant differences found for gender and ethnicity.

Ethnic differences. Tests of between-subject effects for ethnicity indicated the specific areas in which there were significant differences between the African American and Caucasian samples. There were statistically significant differences for Math CRCT, $F(1, 222) = 12.928$, $p=0.001$ partial eta squared = 0.056 and power = 0.947, Reading CRCT, $F(1, 222) = 18.634$, $p=0.001$ partial eta squared = 0.079 and power = 0.990, and English/Language Arts CRCT $F(1, 222) = 7.230$, $p<0.01$ partial eta squared = 0.032 and power = 0.763, with Caucasians having higher mean scores on each measure. This finding supports previous research that indicates Caucasian students obtain higher levels of academic achievement in comparison to African American students (NCES, 2007) on assessments of reading and math.

Additionally, a significant difference was also found for academic self-efficacy $F(1, 222) = 4.775$, $p < 0.05$, partial eta squared = 0.021 and power = 0.585. African Americans reported having higher levels of academic self-efficacy than Caucasians. Such differences would support the possibility of differences in the structural models for African Americans and Caucasians when examined separately and suggest that a total sample model may not be an effective way to explore a model of achievement for these two ethnicities.

Table 13

MANOVA means and standard deviations for each measure by ethnicity

Measure	African American ^a		Caucasian ^b		Total ^c	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Motivation						
Academic Hope	55.93	9.84	54.44	11.29	55.41	10.37
Mastery Approach	12.83	2.65	12.50	2.37	12.71	2.55
Mastery Avoidance	9.99	3.83	10.10	3.17	10.03	3.61
Performance Approach	12.43	2.61	11.69	2.67	12.17	2.65
Performance Avoidance	11.69	3.31	11.42	2.94	11.60	3.18
Global Self-Evaluation						
Academic Self-Efficacy	59.09	9.87	55.85	11.38	57.95	10.52
Self-Esteem	32.19	6.17	31.93	6.14	32.10	6.24
Achievement						
Grade Point Average	77.95	8.83	79.15	11.52	78.37	9.85
Math CRCT	803.38	28.02	818.23	33.73	808.60	30.90
Reading CRCT	822.15	20.61	836.24	29.69	827.10	25.05
English/Language Arts CRCT	824.76	29.77	835.97	34.96	828.70	32.07

^an = 144. ^bn = 78. ^cn = 222

Table 14

MANOVA means and standard deviations for each measure by gender

Measure	Male ^a		Female ^b		Total ^c	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Motivation						
Academic Hope	53.79	11.40	56.88	9.13	55.41	10.37
Mastery Approach	12.34	2.58	13.05	2.42	12.71	2.55
Mastery Avoidance	10.08	3.46	9.98	3.75	10.03	3.61
Performance Approach	11.66	2.83	12.64	2.39	12.17	2.65
Performance Avoidance	11.16	3.05	12.00	3.26	11.60	3.18
Global Self-Evaluation						
Academic Self-Efficacy	57.79	10.38	58.09	10.68	57.95	10.52
Self-Esteem	32.15	6.01	32.06	6.47	32.10	6.24
Achievement						
Grade Point Average	76.15	9.92	80.40	9.38	78.97	9.85
Math CRCT	803.91	30.86	812.89	30.44	808.60	30.90
Reading CRCT	821.94	23.16	831.82	25.87	827.10	25.05
English/Language Arts CRCT	821.70	30.65	835.10	32.12	828.70	32.07

^an = 106. ^bn = 116. ^cn = 222

Gender differences. Tests of between-subject effects for gender indicated the specific areas in which there were significant differences between the African American and Caucasian samples. There were statistically significant differences for measures of achievement including GPA [$F(1,222) = 11.883, p = 0.001, \text{partial eta squared} = 0.052$ and $\text{power} = 0.929$], Math CRCT [$F(1, 222) = 5.822, p < 0.05$ $\text{partial eta squared} = 0.026$ and $\text{power} = 0.671$], Reading CRCT [$F(1, 222) = 10.686, p = 0.001$ $\text{partial eta squared} = 0.047$ and $\text{power} = 0.902$], and English/Language Arts CRCT [$F(1, 222) = 8.963, p < 0.01$ $\text{partial eta squared} = 0.039$ and $\text{power} = 0.846$] in which females obtained higher scores than males. There was also a significant difference for performance approach [$F(1,222) = 5.600, p < 0.05, \text{partial eta squared} = 0.025$ and $\text{power} = 0.654$] for gender with females rating themselves as having higher levels of performance approach than males.

School Differences

A final MANOVA was conducted with the school as the between subjects factor to detect any significant differences present on the surveyed measures (See Table 15). Specifically, the MANOVA was examining whether there were significant differences in performance and responses for students enrolled in a magnet school compared to those enrolled in a comprehensive high school. A statistically significant difference was indicated by school, Wilks' $\Lambda = 0.544, F(11, 210) = 16.006, p < 0.001$. Power to detect the effect of ethnicity was 1.00; Box's M was significant most likely due to significantly different sample sizes; therefore, the analysis was conducted with a significance level of 0.001.

There were statistically significant differences by schools for measures of achievement including GPA [$F(1,222) = 87.63, p < 0.001, \text{partial eta squared} = 0.285$ and $\text{power} = 1.00$], Math CRCT [$F(1,222) = 113.67, p < 0.001, \text{partial eta squared} = 0.341$ and $\text{power} = 1.00$],

Reading CRCT [$F(1,222) = 99.282, p < 0.001, \text{partial eta squared} = 0.311$ and power = 1.00], and English/Language Arts CRCT [$F(1,222) = 142.30, p < 0.001, \text{partial eta squared} = 0.393$ and power = 1.00] with students enrolled in the magnet schools having higher scores. There was also a significant difference for mastery-approach goals [$F(1,222) = 5.65, p < 0.05, \text{partial eta squared} = 0.025$ and power = 0.173] and performance-avoidance goals [$F(1,222) = 9.86, p < 0.05, \text{partial eta squared} = 0.020$ and power = 0.114]. For mastery-approach, students from the magnet schools reported having higher levels ($M=13.73, SD=1.50$) compared to those in comprehensive high schools ($M=12.55, SD=2.65$). Also, students from the magnet high school rated themselves as having higher levels of performance avoidance ($M=12.73, SD=2.28$) compared to those in the comprehensive high schools ($M=11.42, SD=3.27$).

Table 15

MANOVA means and standard deviations for each measure by school type

Measure	Comprehensive ^a		Magnet ^b		Total ^c	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Motivation						
Academic Hope	54.91	10.70	58.60	7.28	55.41	10.37
Mastery Approach	12.55	2.65	13.73	1.50	12.71	2.55
Mastery Avoidance	9.95	3.60	10.50	3.69	10.03	3.61
Performance Approach	12.07	2.68	12.80	2.41	12.17	2.65
Performance Avoidance	11.42	3.27	12.73	2.28	11.60	3.18
Global Self-Evaluation						
Academic Self-Efficacy	57.77	10.66	59.10	9.64	57.95	10.52
Self-Esteem	32.14	6.14	31.86	6.88	32.10	6.24
Achievement						
Grade Point Average	76.30	8.81	91.65	4.24	78.37	9.85
Math CRCT	801.48	25.73	854.13	20.95	808.60	30.90
Reading CRCT	821.59	21.14	862.37	18.74	827.10	25.05
ELA CRCT	820.78	24.87	879.43	26.14	828.70	32.07

^an = 192, ^bn = 30, ^cn = 222

Research Question 1

Will the single model depicted in Figure 1 define the relationships (pathways) between the latent variables of motivation, global self-evaluation, and academic achievement for all students?

In order to address the first research question, the proposed model, seen in Figure 1, was examined for the total sample. The covariance matrix for the total sample is presented in Table 16. Initially, the measurement models were tested. Modifications were made as suggested by the LISREL program in order for the measurement models to produce an appropriate fit. After a reasonable fit was determined, the structural paths were identified in order to test the proposed structural model. Modifications were made to determine if the proposed model could produce reasonable fit indices for the total sample.

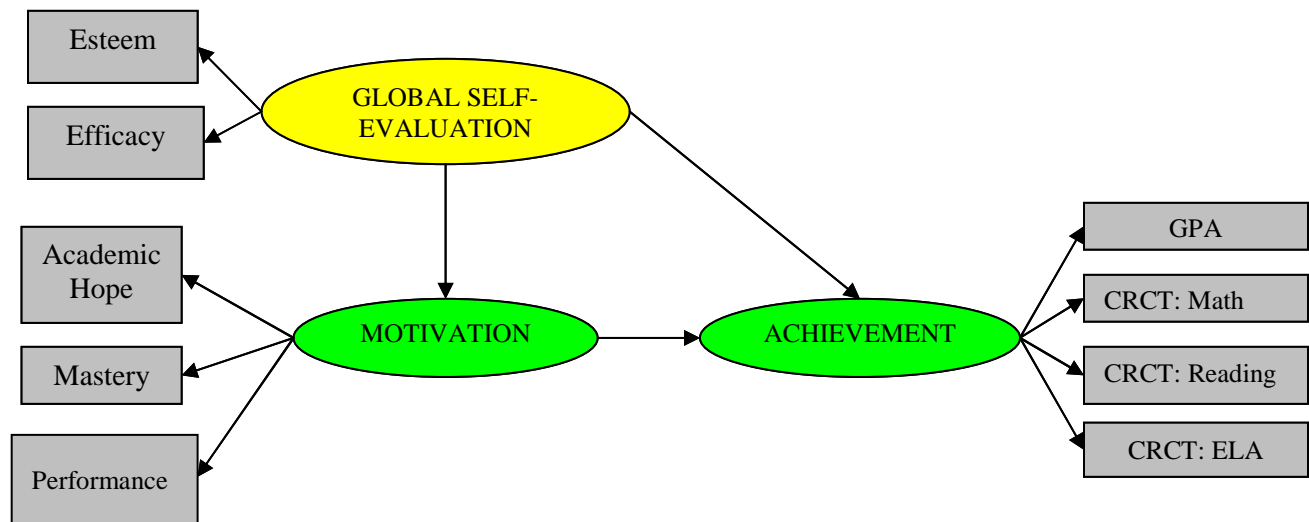


Figure 1. Proposed model of relationships between global self-evaluation, motivation, and academic achievement as measured by their respective observed variables.

Table 16

Covariance matrix for the total sample (N=231)

	1	2	3	4	5	6	7	8	9	10	11
1. GPA	124.81										
2. Math CRCT	161.10	1153.09									
3. Reading CRCT	124.79	578.28	633.95								
4. ELA CRCT	183.51	859.27	635.99	1053.61							
5. Academic Hope	33.29	72.09	58.31	69.31	106.23						
6. Academic Self-efficacy	28.87	53.16	38.20	54.73	72.57	108.92					
7. Mastery Approach	10.21	22.44	17.91	24.15	13.46	14.76	6.48				
8. Mastery Avoidance	2.75	18.29	11.20	20.87	7.28	9.57	2.50	12.87			
9. Performance Approach	8.00	16.97	18.49	17.63	11.52	12.51	4.47	2.97	6.96		
10. Performance Avoidance	6.76	22.51	14.3	24.38	10.19	8.94	3.37	5.76	3.16	10.33	
11. Self-Esteem	6.83	-10.34	14.09	7.76	10.47	10.80	3.51	-1.12	3.75	39.22	1.52

Note. GPA = Grade Point Average; CRCT= Criterion Referenced Competence Tests; Academic Hope = 9 items from the Domain Specific Hope Scale – Revised (Shorey & Snyder, 2004); Self-esteem = Rosenberg Self-Esteem Scale (Rosenberg, 1979);

Self-Efficacy = General Self-Efficacy Scale (Sherer, et al, 1982); Mastery Approach, Mastery Avoidance, Performance Approach and Performance Avoidance = Achievement Goal Questionnaire - Revised (Elliot & Murayama, 2008); Academic Self-Efficacy comprised of items from the Self-Efficacy for Self Regulated Learning and Academic Achievement scales (Zimmerman, Bandura, Martinez-Pons, 1992).

Proposed Model: Measurement Model Analysis

The motivation, self-evaluation, and achievement measurement models were examined to determine if the observed variables comprising the latent variables accounted for an appropriate amount of variance and were statistically significant measures for the respective construct.

Motivation. The motivation measurement model produced a decent fit with $\chi^2 = 39.40$ ($p=0.00$), RMSEA = 0.17, SRMR=0.07, GFI=0.94, and AGFI=0.81. Although not all fit indices are significant, this measurement model appears to have a decent fit as all of the t-values are significant for the observed variables and the R^2 correlation coefficients indicate a moderate to high amount of variance is accounted for by the measures, with some measures such as mastery avoidance having low values as expected based on previous research by Elliot & Murayama (2008) (See Table 17).

Table 17

Factor loadings, standard errors, and R^2 values for the motivation measurement model (N=231)

Measure	Factor Loading	SE	R^2
Academic Hope	0.58	0.68	0.34
Mastery Approach	0.84	0.16	0.71
Mastery Avoidance	0.40	0.25	0.16
Performance Approach	0.77	0.16	0.60
Performance Avoidance	0.52	0.22	0.27

Self-evaluation. When examining the self-evaluation measurement model, an error was produced indicating that the degrees of freedom were negative and a path diagram could not be constructed. This was most likely due to the fact that there were only two observed variables (self-esteem and academic self-efficacy) to measure the latent variable that may not be accounting for all of the variance within the constructed latent variable. Therefore, the self-evaluation measurement model was examined in combination with the motivation and achievement measurement models.

Achievement. The achievement measurement model was tested independently before it was added to the combined motivation/self-evaluation measurement model. The achievement measurement model had the following fit indices $\chi^2 = 2.28$ ($p=0.32$), RMSEA = 0.02, SRMR=0.01, GFI=1.00, AGFI=0.98. These fit indices suggested that the achievement measurement model was a decent fit and did not require modifications. All of the achievement observed variables were significantly different from zero and had moderate to high R^2 values (See Table 18). The English Language Arts CRCT score was the variable that had the highest factor loading and accounted for the most variance. Therefore, in the full measurement model, the ELA CRCT factor loading was set to one.

Table 18

Factor loadings, standard errors, and R^2 values for the achievement measurement model (N=231)

Measure	Factor Loading	SE	R^2
GPA	0.71	0.58	0.50
Math CRCT	0.85	1.67	0.75
Reading CRCT	0.83	1.38	0.69
ELA CRCT	0.92	1.67	0.85

Motivation, self-evaluation, and achievement. Next, the achievement, motivation, and self-evaluation measurement models were put together to produce a measurement model that included all of the latent variables for the proposed structural model. However, LISREL was unable to produce a path diagram. A number of warnings and errors were produced. Initially, the admissibility check failed indicating that this is a bad model or the model strongly disagrees with the data (Jöreskog and Sörbom, 1993).

After setting the admissibility check to off, the combined measurement models were tested again. Additional warnings were produced. The warnings indicated that the matrix was not a positive definite, “ridge option taken with ridge constant = 10.00,” the solution was still not admissible, and maximum likelihood estimates could not be produced.

Motivation and achievement. Since the measurement models for motivation and achievement were reasonable fitting models and the self-evaluation model was the only one that did not appear stable, a measurement model including only the motivation and achievement latent variables was tested. The measurement model resulted in the following fit indices $\chi^2=72.63$ ($p=0.00$), RMSEA = 0.08, SRMR=0.065, GFI=0.93, and AGFI=0.89.

A modification was recommended by the LISREL program to add an error covariance between performance-avoidance and mastery-avoidance. Since these variables are related in the literature (Elliot & Murayama, 2008), the modification was made in an attempt to improve the fit of the measurement model. This modification improved the fit indices to: $\chi^2=34.10$ ($p=0.11$), RMSEA = 0.04, SRMR=0.05, GFI=0.97, AGFI=0.94. This is a good fitting measurement model (See Figure 2). The observed variables were all significantly different from zero. The R^2 coefficients, standard errors and factor loadings are presented in Table 19.

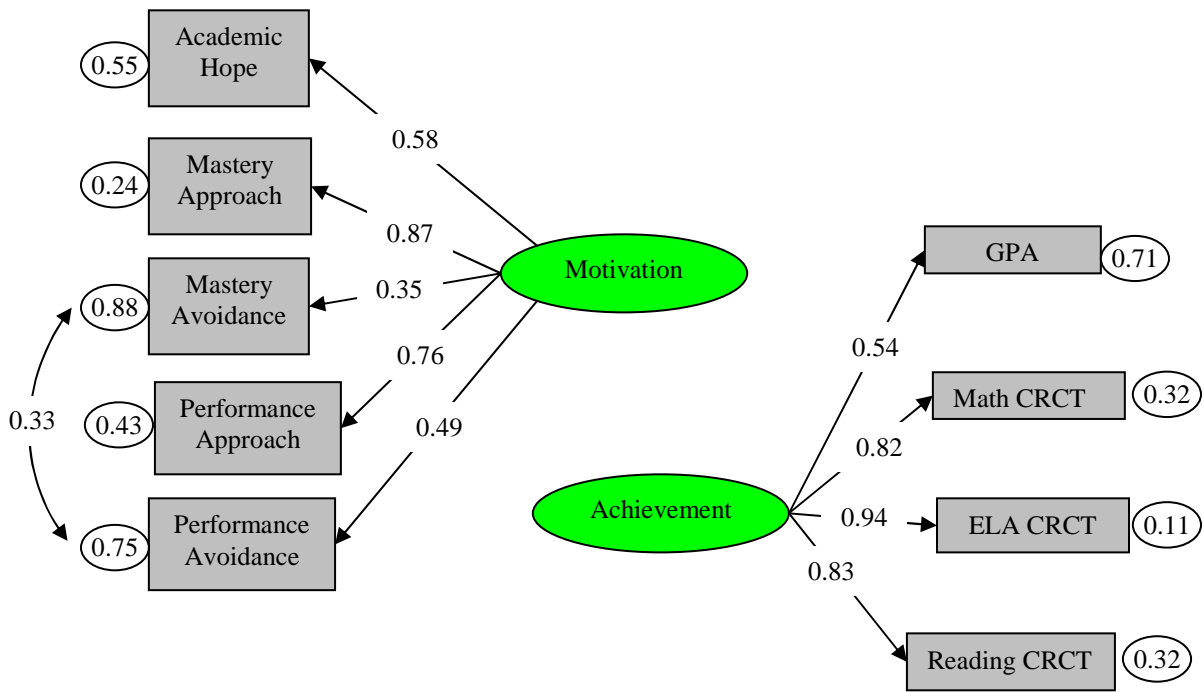


Figure 2. Motivation and Achievement Measurement Models for the Total Sample

Table 19

Factor loadings, standard errors, and R^2 values for the motivation and achievement measurement model ($N=231$)

Measure	Factor Loading	SE	R^2
Academic Hope	0.58	0.32	0.34
Mastery Approach	0.87	---	0.76
Mastery Avoidance	0.35	0.11	0.12
Performance Approach	0.76	0.08	0.57
Performance Avoidance	0.49	0.10	0.24
GPA	0.54	0.02	0.29
Math CRCT	0.82	0.05	0.68
Reading CRCT	0.83	0.04	0.68
ELA CRCT	0.94	---	0.89

Proposed Model: Structural Model Analysis

Although it was determined that a measurement model could not be produced using the three latent variables, as the individual measurement models may have been misspecified, an attempt was made to test the proposed model. In order to examine the proposed model presented in Figure 1, structural relationships had to be added to the syntax of the LISREL program. Structural paths were added from the motivation and self-evaluation latent variables to the achievement latent variable and from the self-evaluation latent variable to the motivation latent variable.

After running the program, the structural model did not produce a path diagram and presented a few errors. First, the program indicated that the solution did not converge after a number of iterations. Second the error variance for achievement was not identified resulting in the failure to compute standard errors, t-values, modification indices, and standardized residuals. Thus, maximum likelihood estimates were not produced. Although no path diagram was produced, the fit indices were reported as follows: $\chi^2 = 145.43$ ($p=0.00$), RMSEA = 0.15, SRMR=0.10, GFI=0.82, AGFI=0.65. Overall, these results along with the failure of the self-evaluation latent variable to produce a model, it is believed that the model had been misspecified. Therefore, alternative models will be analyzed.

Alternative Model Analysis

The proposed structural model presented by the researcher did not define the relationships between the motivation, self-evaluation, and academic achievement latent variables for the total sample. Therefore, alternative models for the total sample were explored. Alternative models were explored through examining the reported errors produced by the LISREL program for the proposed structural model, as summarized in the following sections. The researcher also

considered theoretical and research based relationships between the variables. The latent variables were restructured based on the theories motivation and competence, with goals, a factor in motivation, and motivation reflecting separate latent variables as summarized in the following sections (See Figure 3). Since the model was restructured to account for misspecified measurement models, the measurement models were tested again before examining a structural model.

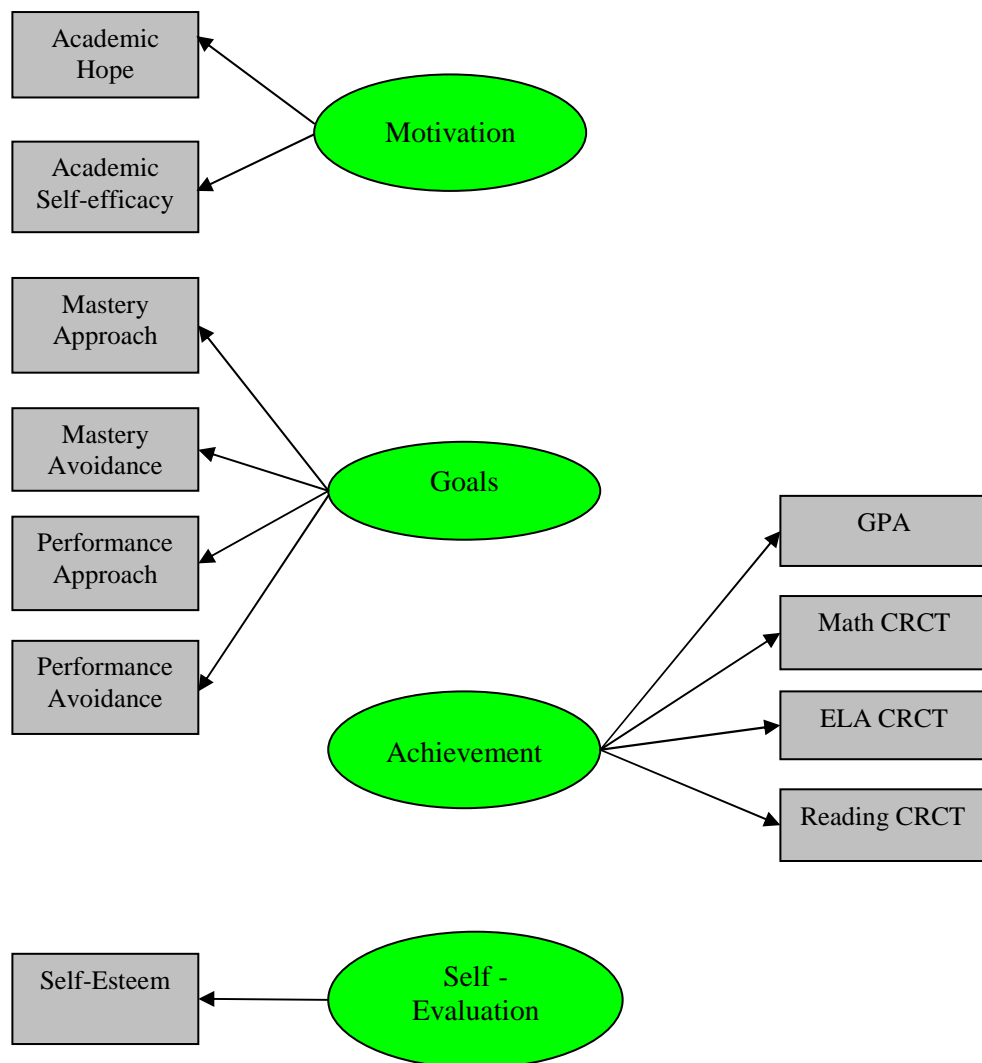


Figure 3. Alternative Measurement Models

Alternative Measurement Models

Goals. The goals latent variable was constructed of the four areas of goal orientation according to Elliot and Murayama (2008). The goals measurement model produced the following fit indices when it was initially tested: $\chi^2 = 36.78$ ($p=0.00$), RMSEA = 0.27, SRMR=0.09, GFI=0.93, AGFI=0.63. This model did not meet fit standards. A modification was suggested by the LISREL output to allow the error covariance of mastery approach and performance approach to correlate. Previous research finds that mastery and performance approach orientations are positively related (Elliot & McGregor, 2001; Elliot & Murayama, 2008); therefore, this modification was made improving the fit indices to: $\chi^2 = 2.06$ ($p=0.15$), RMSEA = 0.06, SRMR=0.01, GFI=1.00, AGFI=0.96. These fit indices are considered to meet the fit standards. Therefore, this is a good fitting measurement model.

Self-evaluation. The self-evaluation measurement model only had one observed variable, self-esteem. This variable was isolated because it is a global measure of one's beliefs about the self. Self-esteem is often found to be positively related to self-efficacy (Bandura, 1977; Baumeister, Campbell, Krueger, & Vohs, 2003; Brown & Mankowski, 1993; Campbell, 1990; Dodgson & Wood, 1998; Kernis, Brocker & Frankel, 1989; McFarlin, et al., 1984) and hope (Snyder, et al., 1991) and thus through those relationships goal orientation.

Since self-esteem was the only observed variable in the latent variable, the error covariance was calculated using a formula presented in Schumacker and Lomax (2004). It was estimated to be 5.92 and was set in the syntax. However, a path diagram was not produced for self-evaluation when tested alone as a warning indicated that the path from the latent to the observed variable may not be identified. Once the factor loading was set to one, the measurement model produced a path. The results indicated that the model was saturate with $\chi^2 = 0.00$ ($p=1.00$).

However, the R^2 coefficient was -2.87. Measurement error was estimated to be 3.87 and the factor loading was 0.81.

Motivation. The motivation measurement model was comprised of academic hope and academic self-efficacy. Hope and self-efficacy are both measures of one's competence and predictors of performance that can be best measured using domain specific scales (Bandura, 1977; Snyder, et al., 1991). Additionally, these measures are related as academic self-efficacy measures one's agency, which is a key component in academic hope (Magaletta & Oliver, 1999) and achieving one's goals.

The measurement model was tested and would not produce a path diagram when it was examined in isolation. However, it was able to run when the measurement models were combined and each latent variable had one observed variable with a factor loading set to one.

Achievement. The achievement measurement model did not change from the proposed model analysis. Therefore, the results were the same. With the fit indices being: $\chi^2 = 2.28$ ($p=0.32$), RMSEA = 0.02, SRMR=0.01, GFI=1.00, AGFI=0.98. These fit indices suggested that the achievement measurement model was a decent fit and did not require modifications. All of the variables were significantly different from zero and had moderate to high R^2 values.

Final measurement model. The measurement models were all combined to examine them as a total model. The initial analysis resulted in multiple warnings. The warnings indicated that the matrix was not a positive definite and could not be analyzed. Additionally, PHI was not a positive definite and the solution was not admissible after a number of iterations. Therefore, the self-evaluation latent variable was removed from the model. This variable appeared to be the weakest because it only had one observed measure and had a negative value for R^2 and a high amount of measurement error when tested individually.

After removing the self-evaluation latent variable, the measurement models were run and the output provided the following fit indices: $\chi^2 = 76.68$ ($p=0.00$), RMSEA = 0.08, SRMR=0.06, GFI=0.94, AGFI=0.89. All of the variables were significantly different from zero and had moderately high R^2 values with the exception of the performance-avoidance and GPA variables which had lower R^2 coefficients of 0.31 and 0.29, respectively. A modification was suggested to allow the error covariance of mastery-avoidance and performance-avoidance to correlate, which would decrease the chi-square value by 33.9. Previous research (Elliot & McGregor, 2001; Elliot & Murayama, 2008), as well as the present study, finds that these variables are positively and significantly correlated, therefore, this modification was made. The modification improved the fit indices to: $\chi^2 = 40.92$ ($p=0.08$), RMSEA = 0.04, SRMR=0.05, GFI=0.97, AGFI=0.94. The final measurement model, including factor loadings and measurement errors, is presented in Figure 4.

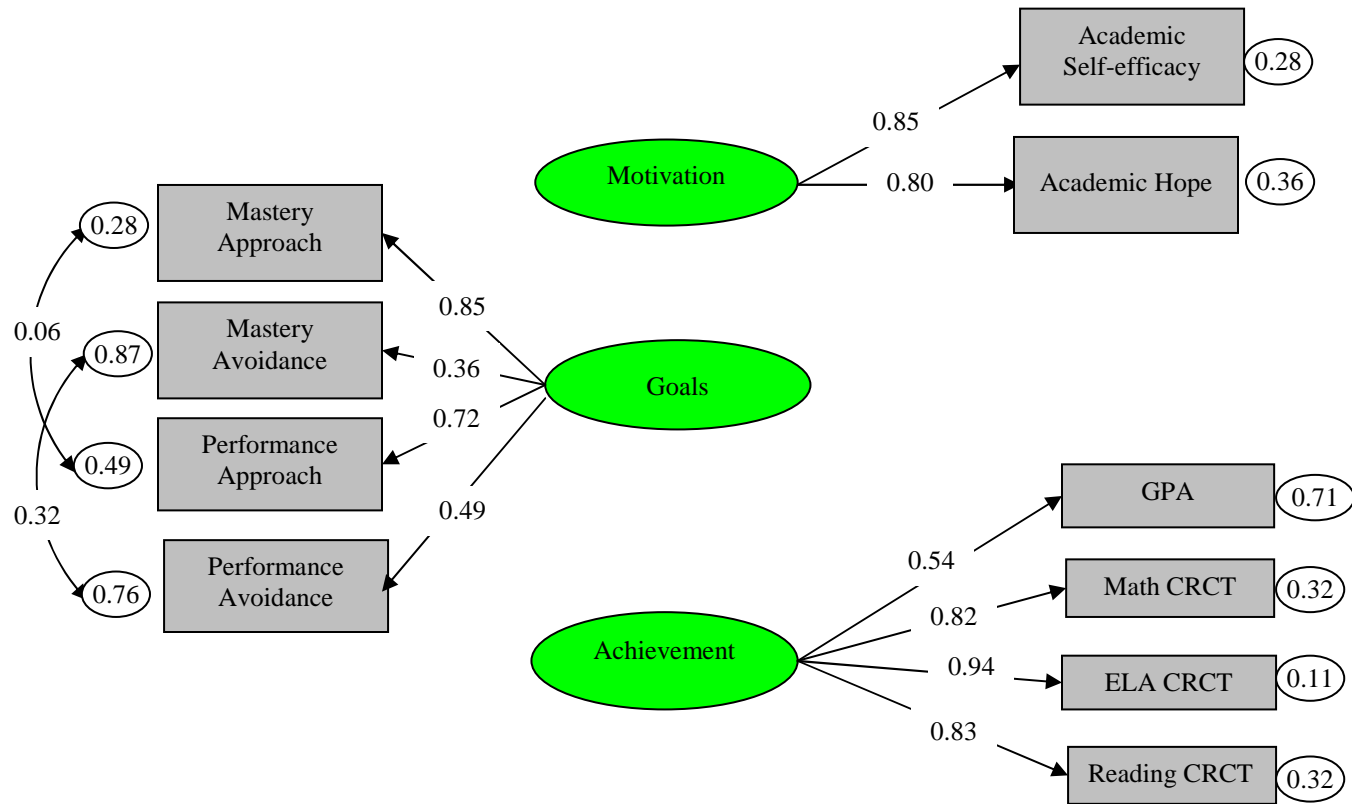


Figure 4. Final Alternative Measurement Model for the Total Sample

Alternative Structural Model

Model 1. After establishing that the alternative measurement model was a decent fit to the data, structural paths were added to the syntax. Paths were added from the motivation latent variable to the goals latent variable and from both the motivation and goals latent variables to the achievement latent variable. These paths were selected based on previous research that indicates there are direct, positive, and predictive relationships between motivation measures and achievement (Bandura, et al., 2001; Bong, 1999; Zimmerman, 2000; Zimmerman, et al., 1992; Snyder, et al., 1991) and goal orientation and achievement (Elliot & McGregor, 2001; Elliot & Murayama, 2008). Also, there is a direct positive relationship between the motivation and goal measures through the agency component of the motivation variables (Magaletta & Oliver, 1999).

The fit indices of the first alternative model tested were $\chi^2 = 40.92$ ($p=0.088$), RMSEA = 0.04, SRMR=0.05, GFI=0.97, AGFI=0.94. All of the fit indices are significant except the AGFI which is approaching significance. The path coefficients for the model indicated some unusually negative relationships. The path coefficient from motivation to achievement (-0.10). Based on the findings of previous research cited above, this path should be positive, as measure of motivation are positively related and predictive of achievement. Therefore, a modification was made to remove the direct path to achievement and mediate that relationship only through the goals latent variable since achievement is the direct result of accomplishing goals.

Model 2. By removing the direct relationship between motivation and achievement, the fit indices improved only slightly to $\chi^2 = 41.33$ ($p=0.10$), RMSEA = 0.03, SRMR=0.05, GFI=0.97, AGFI=0.94. The path coefficients were positive between motivation and goals (0.74) and between goals and achievement (0.37). Although the fit indices did not improve significantly, this model appeared to be the most structurally sound and fits theoretical ideas and research

findings. The final alternative model, with factor loadings and measurement errors, is presented in Figure 5. Table 20 illustrates the changes in fit indices of the alternative models as modifications were made.

Table 20

Fit indices for the alternative structural models by modification

Model	χ^2 (p-value)	RMSEA	SRMR	GFI	AGFI
1	40.92 (0.08)	0.04	0.05	0.97	0.94
2	41.33 (0.10)	0.03	0.05	0.97	0.94

Note. The following are the acceptable levels for each fit criterion χ^2 near 0 with $p > 0.05$, $RMSEA \leq 0.05$, $SRMR < 0.05$, $GFI \geq 0.95$, and $AGFI \geq 0.95$ (Jöreskog & Sörbom, 1993)

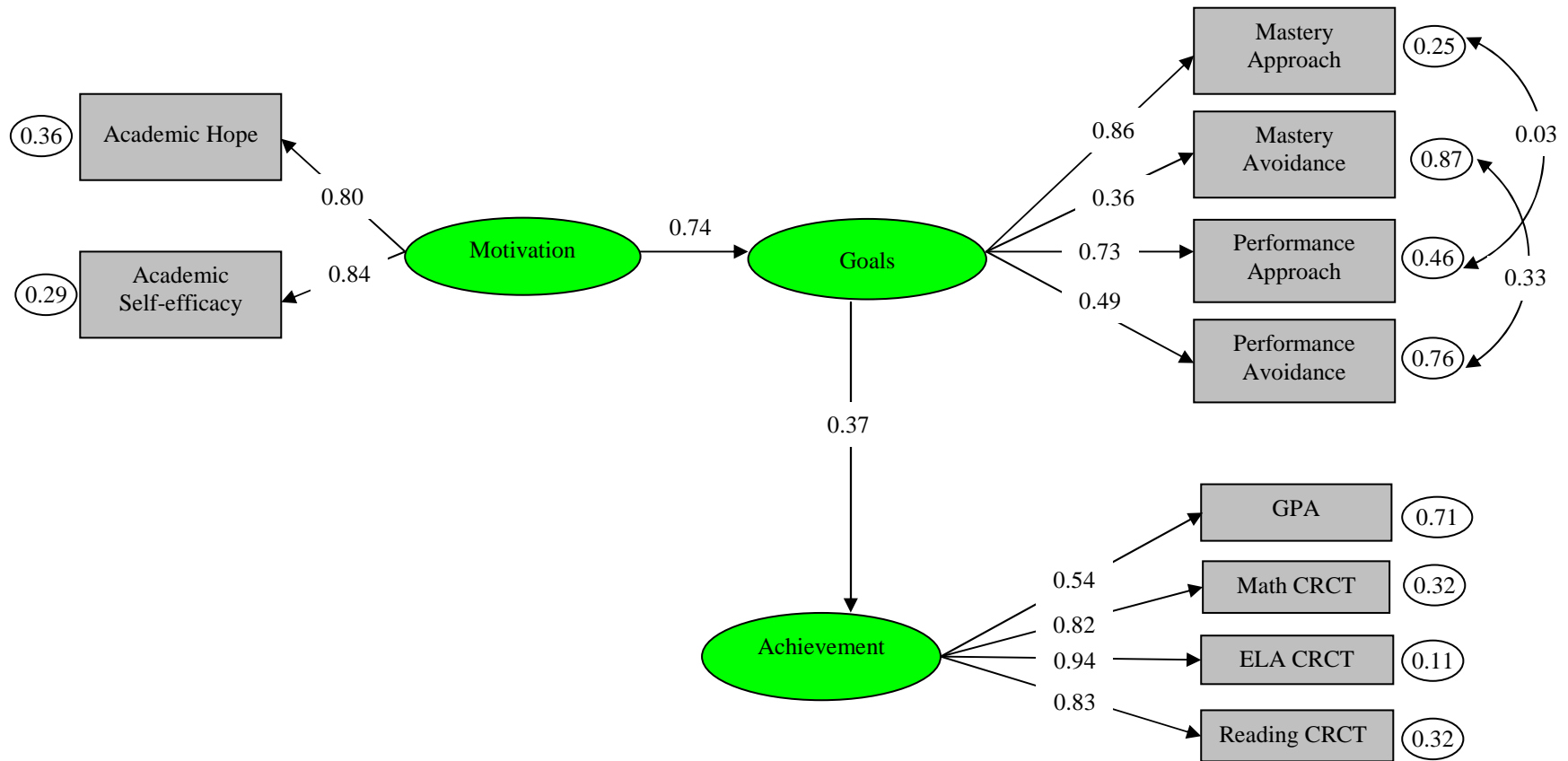


Figure 5. Final Alternative Structural Model for the Total Sample

Summary of Research Question 1

Will the single model depicted in Figure 1 define the relationships (pathways) between the latent variables of motivation, global self-evaluation, and academic achievement for all students?

After identifying a measurement model and testing the proposed structural model, it was determined that the proposed model does not describe the relationships between motivation, self-evaluation, and achievement for the total sample. The proposed model suggested that there would be direct relationships between motivation and achievement, self-evaluation and achievement, and motivation and self-evaluation. An indirect relationship was suggested for self-evaluation to achievement through the motivation variable. However, the results indicated the model proposed does not identify the predicted relationships most likely due to misspecified measurement models. Therefore, alternative models were explored with newly defined latent variables.

Alternative models were explored to determine if an appropriate data-to-model fit could be identified. The new latent variables of goals, motivation, self-evaluation, and achievement were defined. A good fitting measurement model was defined and structural paths were added to the syntax. Results indicated that there was a direct relationship between goals and achievement. The relationship between motivation and achievement was indirect, as motivation was mediated through the goals latent variable. Self-evaluation was completely removed from the model in the end, as the latent had a negative reliability coefficient and negative measurement error.

Research Questions 2 and 2a

When examined separately, what are the similarities and differences in the fit of the proposed model between the African American sample and the Caucasian sample? (2a) If the models differ in terms of fit for the African American and Caucasian samples, where are the differences?

In order to address research questions 2 and 2a, the proposed model (Figure 1) had to be tested using single sample analyses. A measurement model that was an appropriate fit for both the African American and Caucasian samples was identified before the proposed model could be tested. The samples respective variance-covariance matrices are presented in Table 21.

An initial measurement model containing all three latent variables was constructed and labeled as the null model. The null model for both the African American sample and the Caucasian sample was then compared to the modified models as each amendment was made during model testing. Therefore, there were two models produced each time a modification was made, one for the African American sample and one for the Caucasian sample. The Normmed Fit Index (NFI) is a fit index that is most often used to identify changes in the fit for each model. Therefore, the null model NFI was compared to each modified model's NFI to determine if an appropriate amount of change was made and a reasonable fitting model was established.

Table 21

Covariance Matrices for the Caucasian and African American samples respectively

	Caucasian sample											
	1	2	3	4	5	7	8	9	10	11	12	
1. GPA	131.67											
2. Math CRCT	242.97	1144.85										
3. Reading CRCT	204.43	704.65	887.36									
4. ELA CRCT	261.25	1032.55	841.49	1257.01								
5. Academic Hope	54.67	116.75	115.20	140.57	129.80							
7. Academic Self-Efficacy	53.97	100.78	109.27	111.83	98.12	133.91						
8. Mastery Approach	11.50	18.94	22.67	18.12	13.72	15.64	5.65					
9. Mastery Avoidance	2.17	8.36	8.42	8.38	9.06	11.78	2.38	10.24				
10. Performance Approach	12.17	21.64	33.26	25.74	10.96	10.79	3.95	1.83	7.15			
11. Performance Avoidance	9.58	16.91	18.34	19.15	14.41	12.64	3.92	3.33	3.57	8.73		
12. Self-Esteem	5.84	1.64	17.25	14.01	21.10	26.00	4.49	-1.21	2.65	2.68	42.08	

	African American sample										
	1	2	3	4	5	7	8	9	10	11	12
1. GPA	78.05										
2. Math CRCT	163.14	785.34									
3. Reading CRCT	107.45	393.87	425.06								
4. ELA CRCT	168.32	615.15	464.97	886.79							
5. Academic Hope	26.44	51.71	33.53	28.84	96.84						
7. Academic Self-Efficacy	20.68	30.77	15.09	27.44	60.36	97.50					
8. Mastery Approach	10.27	22.36	16.90	26.46	13.16	14.21	7.04				
9. Mastery Avoidance	6.35	24.13	12.26	26.53	6.20	8.64	2.59	14.72			
10. Performance Approach	7.75	17.03	14.96	15.62	12.00	13.04	4.74	3.58	6.84		
11. Performance Avoidance	6.62	24.32	14.00	25.87	6.97	6.58	3.10	7.40	3.20	10.99	
12. Self-Esteem	8.10	20.26	23.25	23.54	8.44	9.45	4.27	-0.48	4.98	2.69	38.11

Once a measurement model was identified as acceptable for both samples, the structural paths suggested by the proposed model (See Figure 1) were entered into the program syntax for each sample so that the proposed structural model could be tested. Modifications were made based on the suggestions of the LISREL output, the standardized residuals, and research based relationships and are summarized in the following sections. Each time a modification was made, the NFI, as well as other fit indices, were examined and compared across ethnic samples. Using the changes in the Normed Fit Index (NFI), Table 22 illustrates the differences in model fit for the African American and Caucasian samples as each modification was made.

Table 22

Summary of Single Sample Model Comparisons

Model	df	Comparison	Caucasian Sample		African American Sample	
			χ^2	Δ NFI	χ^2	Δ NFI
1 (Null)	41	---	74.70	---	110.56	---
2	40	1-2	53.59	0.02	70.00	0.04
3	40	1-3	---	---	70.00	0.04

Note. NFI = Normmed Fit Index

The measurement models and structural model must be determined to be a good fit for both samples of students (i.e., African American and Caucasian) before multi-sample analysis could be conducted to test for equality of structures using a stacked model approach. In examining LISREL models, it is necessary to determine if the proposed model is fit for both groups individually first because when using multi-sample analysis the LISREL 8 program assumes that models are identical for the groups being analyzed (Jöreskog & Sörbom, 1993).

The following analyses and data are presented in a step-by-step manner as modifications were made to each model in order to highlight the differences between the African American and Caucasian samples. The analyses differ from that of research question 1 in that research question 2 compared the results of the proposed structural model (Figure 1) for the African American sample and the Caucasian sample; whereas, research question 1 attempted to identify whether or not the proposed model would be a reasonable fit for the total sample. Therefore, research question 1 did not examine the change in the NFI index as research question 2 will. Also, research question 2 will provide more comparative data for the African American and Caucasian samples. Research question 1 was only concerned with the significance of values and the fit of the overall model.

Measurement Model Analysis

Null model. Model 1 was a baseline model in which the correlations between all observed variables were constrained to zero (Garson, 2009). The three latent variables and their respective observed variables were combined to create the null model. However, no relationships were identified between variables. All of the observed variables were examined and those with the strongest R^2 values were identified as the best measure for that variables particular latent variable. For both samples, ELA CRCT scores, mastery-approach, and academic self-efficacy had the highest R^2 values and therefore accounted for the most variance for the latent variable it represents. After testing the null models, neither the Caucasian sample ($\chi^2=74.70$ with $p=0.001$, RMSEA =0.10, SRMR=0.08, GFI=0.85, AGFI=0.76) nor the African American sample ($\chi^2=110.56$ with $p=0.000$, RMSEA =0.11, SRMR=0.08, GFI=0.88, AGFI=0.80) had fit indices that met the fit standards for the initial measurement model.

Modifications to the measurement models: Model 2. When establishing the initial null model a modification was made to each sample's measurement model. Both modifications, as suggested by the LISREL program were concerning the motivation section of the measurement model. However, for the African American sample, it was recommended that the avoidance variables have error covariances that correlate and for the Caucasian sample, the error covariances of the approach observed variables were suggested to be correlated. These modifications were made to the respective measurement models. Results of the modifications illustrated a slight improvement in the fit of the Caucasian and African American measurement models. The fit indices were $\chi^2=53.59$ with $p=0.074$, RMSEA =0.06, SRMR=0.08, GFI=0.89, AGFI=0.81 for the Caucasian sample and $\chi^2=73.52$ with $p=0.002$, RMSEA =0.07, SRMR=0.06, GFI=0.92, AGFI=0.87 for the African American sample. Most of the fit indices were approaching significance or met the fit standards. Therefore, these models were considered the final measurement models for the individual samples. The factor loadings, standardized errors, and squared multiple correlations as presented in the standardized solution output are given for each measure by sample in Table 23 to illustrate the differences in the measurement models.

Model 2 similarities and differences. In comparing the results of the measurement models, there were only minor differences between ethnicities for the observed variables. The greatest difference was found for the measure of academic self-efficacy which had an R^2 correlation of 0.35 for the African American sample and an $R^2 = 0.90$ for the Caucasian sample; the factor loading was also significantly different for the academic self-efficacy scale, with it being stronger for the Caucasian sample. The self esteem variable was not different between the samples, however, it was not a strong measure, as it accounted for little variance and had moderately low factor loadings for the African American (0.26) and Caucasian (0.36) samples.

Table 23

Model 2: Maximum Likelihood Estimates by Ethnic Group

Latent Variables/Measure	Caucasian			African American		
	Loading	SE	R ²	Loading	SE	R ²
Motivation						
Academic Hope	0.84	0.98	0.70	0.64	0.37	0.41
Mastery Approach	0.67	-	0.45	0.83	-	0.69
Mastery Avoidance	0.36	0.25	0.13	0.35	0.15	0.12
Performance Approach	0.47	0.16	0.22	0.79	0.09	0.62
Performance Avoidance	0.53	0.24	0.28	0.41	0.13	0.17
Global Self-Evaluation						
Academic Self-Efficacy	0.95	-	0.90	0.59	-	0.35
Self-Esteem	0.36	0.07	0.13	0.26	0.08	0.06
Achievement						
Grade Point Average	0.69	0.03	0.47	0.75	0.02	0.56
Math CRCT	0.89	0.06	0.79	0.84	0.07	0.70
Reading CRCT	0.82	0.06	0.68	0.83	0.05	0.69
ELA CRCT	0.96	-	0.93	0.88	-	0.78

Performance approach squared multiple correlation coefficients were different between the samples with a moderate to high estimate ($R^2=0.62$) for the African American sample and a low estimate ($R^2=0.22$) for the Caucasian sample.

In both samples, standardized measures of academic achievement (CRCT scores) were better measures of the achievement construct in comparison to GPA. However, all observed variables for achievement had moderate R^2 coefficients and significant t-values. Neither sample was identified as having significantly better results across the achievement observed variables. Although the Caucasian sample did have a higher factor loading and R^2 coefficient for ELA CRCT (0.96/0.93) compared to the African American sample (0.88/0.78).

Within the motivation construct, the mastery-avoidance observed variable had low reliability estimates for the Caucasian ($R^2=0.13$) and African American ($R^2=0.12$) samples.

Although it would be reasonable to remove an observed variable that was not accounting for a significant amount of variance, this measure was not removed because the proposed structural model had not yet been tested. All measures within the motivation latent variable had t-values that were significantly different from zero.

Proposed Structural Model Analysis

Model 3. The proposed paths as identified in Figure 1 from the motivation and self-evaluation latent variables to the achievement latent dependent variable and from the self-evaluation variable to the motivation latent variable were added to test the proposed structural model. The proposed model suggests that motivation and achievement are dependent latent variables and self-evaluation is an independent latent variable.

Upon inputting the suggested paths and testing the proposed structural model, the African American sample resulted in a model with the following fit indices: $\chi^2=70.00$ with $p=0.002$, RMSEA =0.07, SRMR=0.06, GFI=0.92, AGFI=0.87. Although a model was produced, the fit indices do not meet fit standards according to Jöreskog and Sörbom (1993). The modifications suggested by the LISREL program were to allow observed variable to correlate across latent variables. This would suggest that the measurement models may be misspecified. Therefore, alternative models were examined for the African American sample.

Unlike the African American sample's results, the Caucasian sample's model resulted in errors. The errors indicated negative error variance (matrix not a positive definite) and a failure to produce maximum likelihood estimates after a specified number of iterations. Therefore, no path diagram was produced indicating that the proposed structural model did not identify the relationships between motivation, self-evaluation, and achievement for the Caucasian sample. Therefore alternative models were examined.

Alternative Model Analysis

The proposed structural model presented by the researcher did not define the relationships between the motivation, self-evaluation, and academic achievement latent variables for the total sample. Therefore, alternative models for the African American and Caucasian samples were explored as they were for Research Question 1. Alternative models were explored through examining the reported errors produced by the LISREL program and the maximum likelihood estimates for the proposed structural model and are summarized in the following sections. The researcher also considered theoretical and research based relationships between the variables. The latent variables were restructured based on the theories motivation and competence, with goals, a factor in motivation, and motivation reflecting separate latent variables (See Figure 3). Since the model was restructured to account for misspecified measurement models, the measurement models were tested again before examining a structural model.

Alternative Measurement Models

Goals. The goals latent variable was constructed of the four areas of goal orientation according to Elliot and Murayama (2008). The goals measurement model produced the following fit indices when it was initially tested for the African American sample: $\chi^2 = 37.54$ ($p=0.00$), RMSEA = 0.35, SRMR=0.12, GFI=0.88, AGFI=0.42 and were $\chi^2 = 2.45$ ($p=0.29$), RMSEA = 0.05, SRMR=0.03, GFI=0.98, AGFI=0.92 for the Caucasian sample. The measurement model did not meet fit standards for the African American sample, but was a good fit for the Caucasian sample.

For the African American sample, a modification was suggested by the LISREL output to allow the error covariance of mastery-approach and performance-approach to correlate. Previous

research finds that mastery and performance approach orientations are positively related (Elliot & McGregor, 2001; Elliot & Murayama, 2008); therefore, this modification was made improving the fit indices to: $\chi^2 = 2.36$ ($p=0.12$), RMSEA = 0.09, SRMR=0.01, GFI=0.99, AGFI=0.92. These fit indices are considered to meet the fit standards. Therefore, the modified measurement model for the African American sample was considered to be a good fit.

Self-evaluation. The self-evaluation measurement model only had one observed variable, self-esteem. This variable was isolated because it is a global measure of one's beliefs about the self. Self-esteem is often found to be positively related to self-efficacy (Bandura, 1977; Baumeister, Campbell, Krueger, & Vohs, 2003; Brown & Mankowski, 1993; Campbell, 1990; Dodgson & Wood, 1998; Kernis, Brocker & Frankel, 1989; McFarlin, et al., 1984) and hope (Snyder, et al., 1991) and thus through those relationships goal orientation.

Since self-esteem was the only observed variable in the latent variable, the error covariance was calculated using a formula presented in Schumacker and Lomax (2004). It was estimated to be 6.47 for the African American sample and 4.58 for the Caucasian sample. The error covariance was specified in the respective samples' syntax. For the African American sample, the factor loading for self-esteem was 0.91, R^2 was 0.83, and the standard error was 0.40. The t-value was significantly different from zero and the model was indicated to have a $\chi^2 = 0.00$ with $p=1.00$. The Caucasian sample produced similar results with a factor loading = 0.94, $R^2 = 0.89$, and the standard error = 0.55. Again, $\chi^2 = 0.00$ with $p=1.00$.

Motivation. The motivation measurement model was comprised of academic hope and academic self-efficacy. Hope and self-efficacy are both measures of one's competence and predictors of performance that can be best measured using domain specific scales (Bandura, 1977; Snyder, et al., 1991). Additionally, these measures are related as academic self-efficacy

measures one's agency, which is a key component in academic hope (Magaletta & Oliver, 1999) and achieving one's goals.

The measurement model was tested and would not produce a path diagram for either sample. A fatal error indicated that the degrees of freedom is negative. However, the measurement model was able to run when the measurement models were combined and each latent variable had one observed variable with a factor loading set to one. These results are presented below in the combined measurement model section.

Achievement. The achievement measurement model produced the following fit indices: $\chi^2 = 3.87$ ($p=0.14$), RMSEA = 0.08, SRMR=0.01, GFI=0.99, AGFI=0.93 for the African American sample and $\chi^2 = 2.54$ ($p=0.28$), RMSEA = 0.05, SRMR=0.01, GFI=0.98, AGFI=0.92 for the Caucasian sample. These fit indices suggested that the achievement measurement model was a good fit for both samples and did not require modifications. All of the variables were significantly different from zero and had moderate to high R^2 values.

Combined measurement models: Null models. The measurement models were all combined to examine them as a total model. The following fit indices were reported for the African American sample: $\chi^2 = 88.80$ ($p=0.00$), RMSEA = 0.09, SRMR=0.07, GFI=0.90, AGFI=0.82. All of the variables were significantly different from zero and had moderately high R^2 values with the exception of the performance- and mastery- avoidance variables which had low R^2 coefficients of 0.23 and 0.17, respectively. A modification was suggested to allow the error covariance of mastery-avoidance and performance avoidance to correlate, which would decrease the chi-square value by 37.5 for the African American sample. Previous research (Elliot & McGregor, 2001; Elliot & Murayama, 2008), as well as the present study, finds that these variables are positively and significantly correlated, therefore, this modification was made. The

modification improved the fit indices to: $\chi^2 = 48.34$ ($p=0.10$), RMSEA = 0.04, SRMR=0.05, GFI=0.94, AGFI=0.90.

For the Caucasian combined measurement model, the fit indices were: $\chi^2 = 42.64$ ($p=0.32$), RMSEA = 0.03, SRMR=0.07, GFI=0.91, AGFI=0.85. This appeared to be a decent fitting measurement model as the chi-square value was not significant and other fit indices met fit standards or were approaching significance.

Alternative Structural Models

Model 2. After establishing alternative measurement models for each sample, structural relationships were added to the syntax. Initially, paths were added from the self latent variable to both the motivation and goals latent variables, from the motivation latent variable to the goals latent variable, and from both the motivation and goals latent variables to the achievement latent variable. These paths were selected based on previous research that indicates there are positive relationships between self-esteem and motivation and goal measures Bandura, 1977; Baumeister, Campbell, Krueger, & Vohs, 2003; Brown & Mankowski, 1993; Campbell, 1990; Dodgson & Wood, 1998; Kernis, Brocker & Frankel, 1989; McFarlin, et al., 1984; Snyder, et al., 1991). There are direct, positive, and predictive relationships between motivation measures and achievement (Bandura, et al., 2001; Bong, 1999; Zimmerman, 2000; Zimmerman, et al., 1992; Snyder, et al., 1991) and goal orientation and achievement (Elliot & McGregor, 2001; Elliot & Murayama, 2008); and there is a direct positive relationship between the motivation and goal measures through agency (Magaletta & Oliver, 1999).

The fit indices of the first alternative structural model tested for the Caucasian sample were $\chi^2 = 43.21$ ($p=0.34$), RMSEA = 0.03, SRMR=0.07, GFI=0.91, AGFI=0.85. Some of these fit indices are significant and chi-square is not significant as necessary, while others are

approaching significance. The path coefficient from the self-evaluation latent variable was 0.39 to the motivation latent and 0.03 to the goals latent variable. The path coefficient from motivation to achievement was 0.32. The path from goals to achievement was 0.30 and the path from motivation to goals was 0.68.

The fit indices for initial alternative structural model of the African American sample were: $\chi^2 = 48.29$ ($p=0.12$), RMSEA = 0.04, SRMR=0.05, GFI=0.94, AGFI=0.90. The path coefficients from the self-evaluation latent variable were 0.22 to the goals latent and 0.20 to the motivation latent variable. The path coefficient from motivation to achievement was negative for the African American students at -0.27. The path from goals to achievement was 0.63. Finally, the path coefficient from motivation to goals was 0.71. Although both samples appeared to have decent fitting models, a few modifications were attempted to strengthen the fit indices.

Model 3. For the Caucasian sample, the only suggested modifications from the LISREL program were to add path coefficients from the GPA observed variable to other latent variables. Since there was concern about crossing observed variables onto other latent variables and the possibility of co-linearity, a modification was made removing GPA from the model. Fit indices were: $\chi^2 = 28.50$ ($p=0.60$), RMSEA = 0.00, SRMR=0.06, GFI=0.93, AGFI=0.88. The path coefficient from motivation to achievement was 0.31 and from motivation to goals was 0.68. The path coefficient from goals to achievement was only 0.08. The path coefficient from self-evaluation to motivation was 0.39 and the path to goals was 0.04. No additional modifications were made to the Caucasian model, as there were no additional suggested changes, and most of the fit indices were significant. Figure 6 illustrates the final alternative structural model for the Caucasian sample, including the factor loadings, path coefficients, and measurement errors.

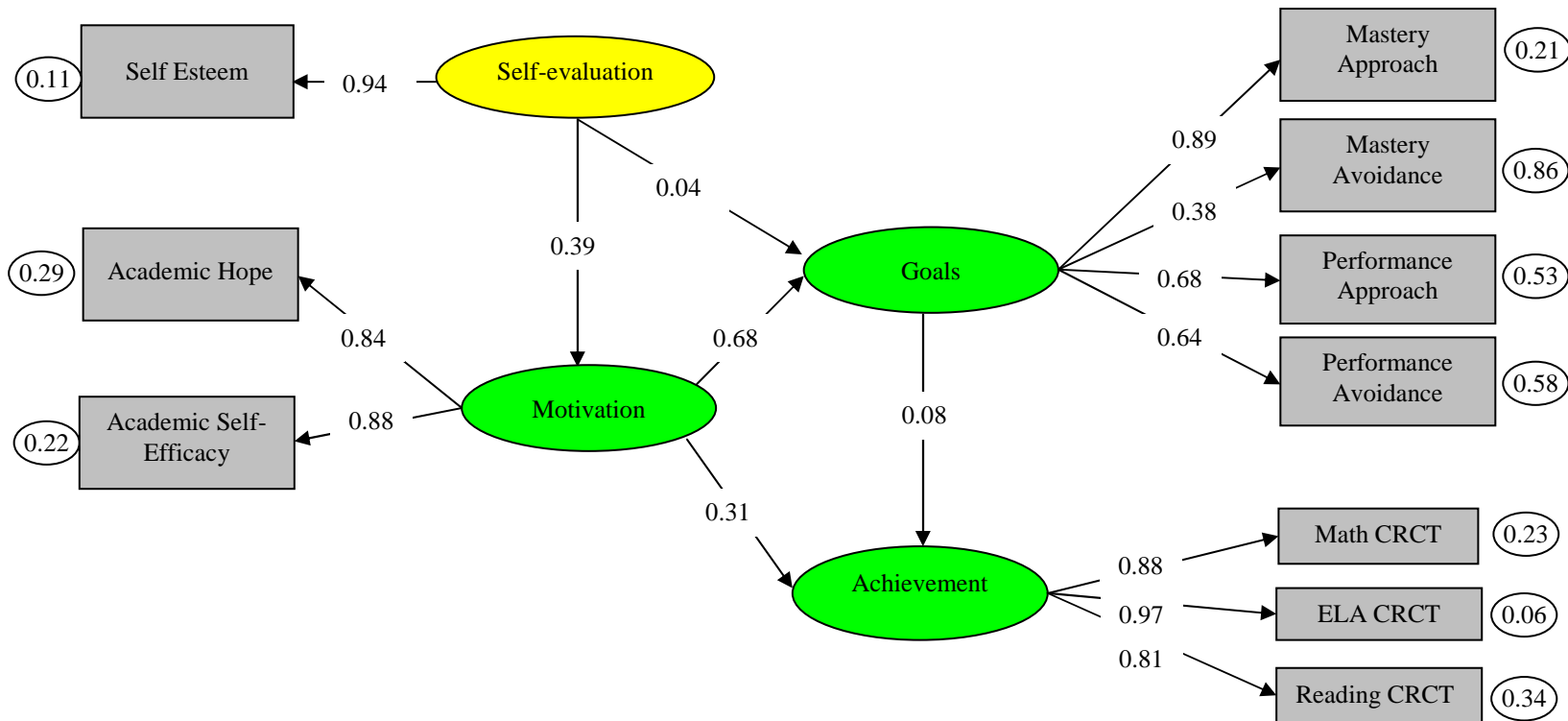


Figure 6. Final Alternative Structural Model for the Caucasian sample

Similar to the results for the Caucasian sample, for the African American sample the suggested modifications were to add path coefficients from GPA to other latent variables besides achievement. Therefore, the modification made to examine Model 3 was the removal of the GPA observed variable. The modifications produced the following fit indices: $\chi^2 = 31.43$ ($p=0.35$), RMSEA = 0.02, SRMR=0.04, GFI=0.96, AGFI=0.92. The path coefficients were 0.63 from goals to achievement, -0.32 from motivation to achievement, and 0.71 from motivation to goals. The path from the self-evaluation latent to motivation was 0.20 and 0.22 to goals. This model appears to be slightly improved from the initial structural model tested for the African American sample. However, because a negative relationship remained between motivation and achievement another modification was made for the African American sample's model.

Model 4. A fourth model was tested for the African American sample. The modification made was to remove the direct path from motivation to achievement, as this path was negative. The fit indices after the modification were: $\chi^2 = 33.156$ ($p=0.32$), RMSEA = 0.02, SRMR=0.05, GFI=0.96, AGFI=0.92. Although the fit indices did not improve much, this model appears to be the best fitting model for the African American sample theoretically, as there should not be a negative relationship between motivation and achievement. Figure 7 illustrates the final alternative structural model for the African American sample, including the factor loadings, path coefficients, and measurement errors Table 24 illustrates the differences in the alternative structural models for the African American and Caucasian samples.

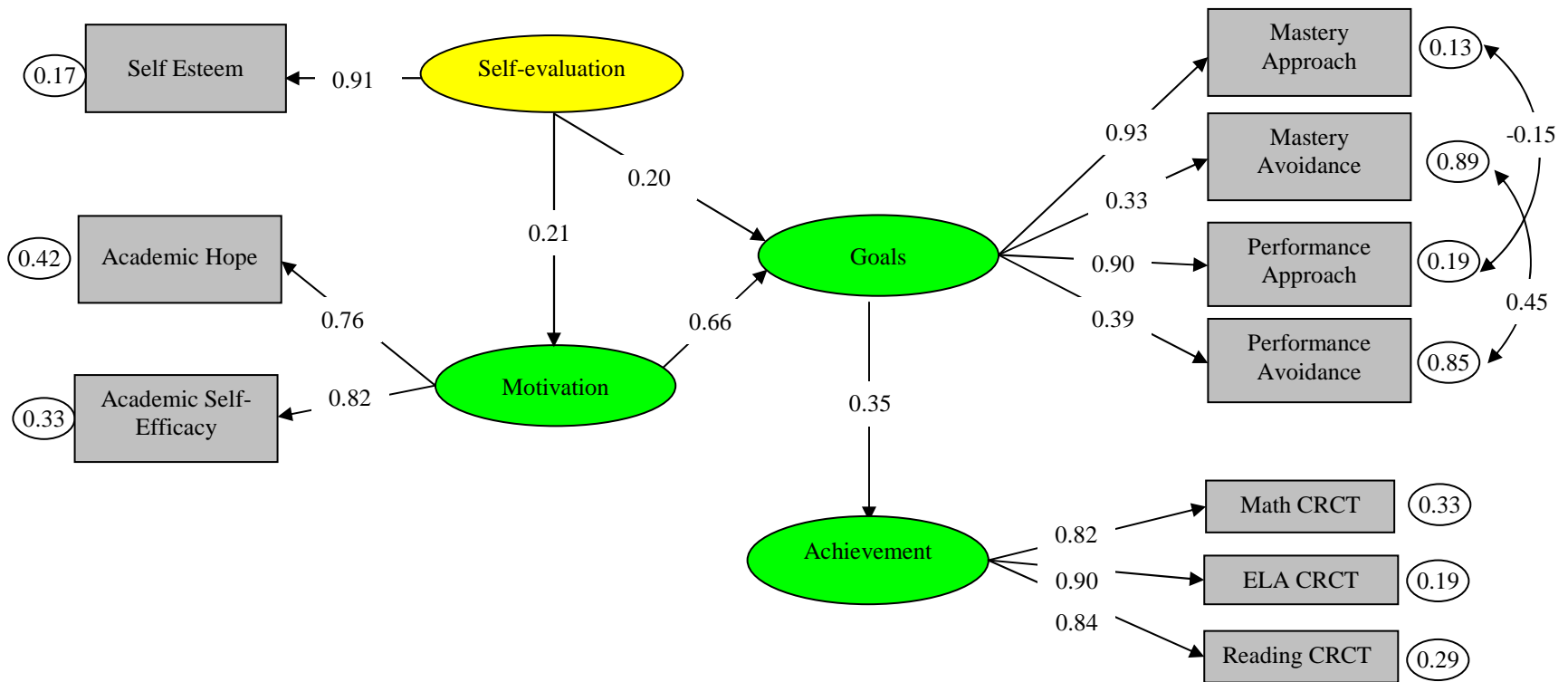


Figure 7. Final Alternative Structural Model for the African American sample

Table 24

Summary of Single Sample Alternative Model Comparisons

Model	Comparison	Caucasian Sample			African American Sample		
		df	χ^2	Δ NFI	df	χ^2	Δ NFI
Null	---	39	42.64	---	37	51.76	---
2	1-2	40	43.21	0.00	38	58.80	0.00
3	1-3	31	28.50	0.01	29	31.43	0.01
4	1-4	---	---	---	30	33.15	0.00

Note. NFI = Normmed Fit Index

Summary of Research Questions 2 and 2a

When examined separately, what are the similarities and differences in the fit of the proposed model between the African American sample and the Caucasian sample? (2a) If the model differs in terms of fit for the African American and Caucasian samples, where are the differences?

Research questions 2 and 2a were addressed after establishing a measurement model that fit for both the African American and Caucasian samples. When the proposed model was tested with both samples separately, the relationships between the motivation, self-evaluation, and achievement latent variables were not appropriately defined for either sample. The proposed model would not produce a path diagram for the Caucasian sample and the resulting model for the African American sample appeared to be weak and contain misspecified measurement models. Therefore, alternative models were explored.

In examining the alternative samples, measurement models were restructured to better fit theoretical perspectives on the observed measures. There were different measurement models for

each ethnic group as there were some variations in the relationships between measures. For example, it was necessary for some observed variables within a latent to correlate for the African American sample, but not for the Caucasian sample. After establishing measurement models, the alternative structural models were tested. The African American and Caucasian samples had slightly different structural models, more in terms of fit and path coefficients than direct versus indirect relationships. However, there were some differences in the paths to achievement.

Similarities. Throughout the measurement and structural model testing, there were similarities between the African American and Caucasian samples. Initially, ELA CRCT scores, mastery-approach, and academic self-efficacy had the highest R^2 values for the latent variables they represent and CRCT scores were better measures of the achievement construct in comparison to GPA. The mastery avoidance measures were also noted to have low R^2 coefficients for both samples.

Evaluation of the initial measurement models, specifically how well the observed variables accounted for the variance within their particular latent variable, indicated that the self-esteem did not account for a significant amount of variance for the self-evaluation latent variable for both samples displaying low R^2 coefficients and low factor loadings throughout measurement model testing. Upon examining the alternative measurement models, it was noted that self-esteem had high factor loadings and accounted for a large amount of variance based on the calculation of error covariance.

Structurally, the resulting models were composed of the same latent variables: motivation, goals, and achievement. There was a positive relationship between motivation and goals for both samples. There was also a positive relationship between goals and achievement for

the African American and Caucasian samples. The self-evaluation latent variable was positively related to the motivation and goals latent variables for both samples as well.

Differences. In terms of differences, the African American and Caucasian samples exhibited the greatest differences in comparing their final best fitting models. Although both final, alternative models contained the same latent variables: self-evaluation, goals, motivation, and achievement, the strength of the path coefficients were markedly different. The path from goals to achievement was much stronger for the African American (0.35) sample than for the Caucasian (0.08) sample. Also, there was a direct path from motivation to achievement for the Caucasian sample; whereas for the African American sample, motivation was mediate through goals to achievement, as the initial path from motivation to achievement was negative.

Additional differences occurred in the analysis of the alternative models' observed variables. There was a difference in the strength of the performance-approach variable by each sample, with the initial R^2 coefficient = 0.68 for the African American sample and R^2 coefficient = 0.47 for the Caucasian sample. Other variables that had differences in the amount of variance accounted for were performance-avoidance and ELA CRCT scores, which were greater for the Caucasian sample. There were also correlations between observed variables' covariance errors for the African American sample but not for the Caucasian sample, including the relationships between the performance- and mastery- approach goals and the relationships between the performance- and mastery- avoidance goals.

CHAPTER 5
DISCUSSION

The current research attempted to determine if the proposed model (Figure 1) defines the relationships between the motivation, self-evaluation, and achievement variables. Additionally, it examined the proposed model separately for samples of African American and Caucasian students. It was hypothesized that motivation would have a direct relationship to achievement, as both of the observed variables, mastery and academic hope, demonstrate predictability to academic achievement. The model also suggested that self-evaluation would have a direct relationship to academic achievement and an indirect relationship to academic achievement, as mediated through the motivation latent variable.

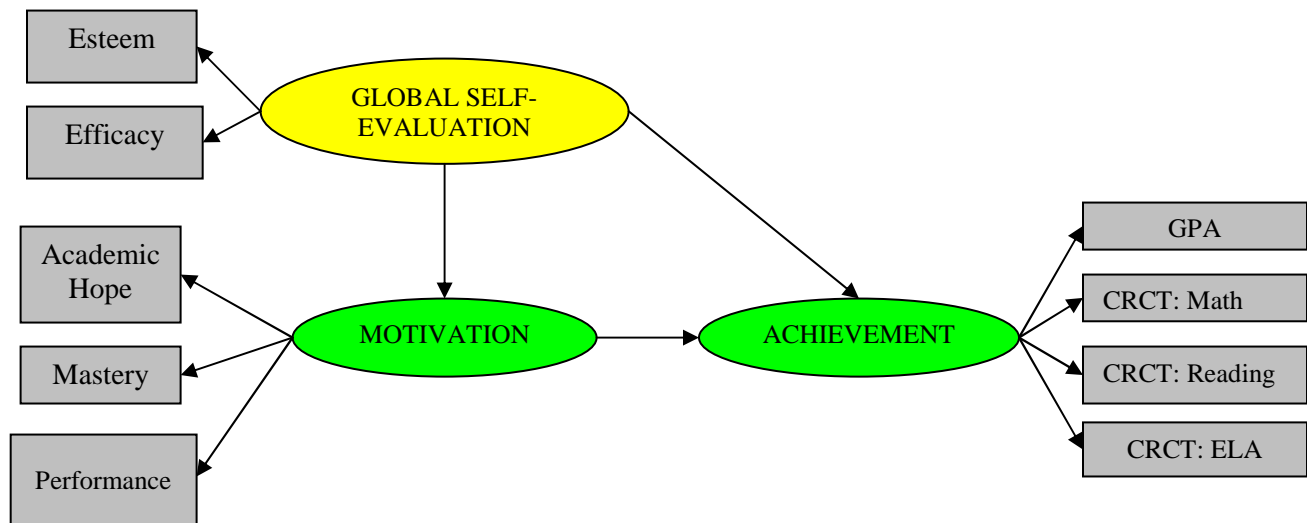


Figure 1. Proposed model of relationships between global self-evaluation, motivation, and academic achievement as measured by their respective observed variables.

Research was conducted with ninth grade students in a large school district in the southeast United States. A survey requesting students to provide demographic information as well as respond to measures of academic hope, goal orientation, self-esteem, and academic self-efficacy was distributed to students. Academic achievement measures for each student were obtained from the school district's databases by the researcher. The students' survey responses and achievement measures were then entered into an excel file and exported into statistical software. Descriptive statistics, Cronbach alpha reliability coefficients, and Pearson product moment correlation coefficients (intercorrelations) were provided for the measures used in the survey. Additionally, MANOVAs were conducted to determine if there were any significant differences for socioeconomic status on ethnicity and gender, ethnicity on any of the survey measures, and school type (magnet or comprehensive) on any of the survey measures. Finally, SEM analysis was conducted on the total sample and the ethnic samples separately.

Results of statistical analysis indicated a significant difference for ethnicity on achievement measures and academic self-efficacy, for gender on achievement measures and performance-approach, and for socioeconomic status on ethnicity. School differences were noted on measures of achievement, mastery-approach goals and performance-avoidance goals. SEM analysis indicated that the proposed model did not define the relationships between motivation, self-evaluation, and achievement for the total sample or the ethnic samples examined separately. Alternative models were tested and established for each sample.

Summary and Explanation of Results

Research Question 1

Will the single model depicted in Figure 1 define the relationships (pathways) between the latent variables of motivation, global self-evaluation, and academic achievement for all students?

In the total sample analysis, it was determined that the proposed model does not produce a reasonable data-to-model fit. That is, the proposed model does not define the relationships between the latent variables of motivation, self-evaluation, and academic achievement for all students. The direct relationship between motivation and academic achievement was established via an alternative model. However, there was not a significant relationship between the self-evaluation latent variable and the motivation or academic achievement latent variables.

Alternative models indicated that there was a direct relationship between goals and achievement and an indirect relationship between motivation and achievement as mediated by the goals latent variable for the total sample.

Proposed measurement models. In establishing a measurement model for the total sample there were some difficulties getting the measurement models to function correctly, as a number of errors were produced by the LISREL program. Many of the errors appeared to center around the self-evaluation latent variable, as when it was removed, the measurement model was approaching fit standards. One modification was made and was based on the suggestions of the LISREL program and research based relationships between observed variables. The measurement model modification was the addition of an error covariance between two observed variables in the goals latent variable. After making the modification, squared multiple correlation coefficients, t-values, factor loadings, and fit indices were examined to determine if the

measurement model was an appropriate fit. An appropriate fitting measurement model was defined by fit indices at or near suggested fit standards.

In examining the proposed model's measurement models, the observed variables within the motivation model appeared to vary in terms of accounting for variance, with the approach variables accounting for more than the avoidance variables. Mastery approach was identified as having the highest factor loading for the motivation latent variable for the total sample.

The achievement latent variable was comprised of strong measures of academic achievement as all of the observed variables had moderate to high factor loadings, R^2 coefficients, and significant t-values. GPA was the weakest observed variable in the achievement latent variable with an R^2 coefficient of 0.29. The achievement observed variables loaded appropriately on only the academic achievement latent variable and correlated with expected measures based on previous research, such as academic hope.

The self-evaluation variable was the latent appeared to be the weakest, as it was unable to produce a measurement model when it was tested individually. Additionally, self-evaluation was a hindrance to the other measurement models when tested together. Self-evaluation caused multiple errors in the testing of the combined measurement models. It was ultimately removed from the model.

Proposed structural models. After a measurement model was established for the total sample, the proposed structural paths were added to the LISREL syntax. The program was unable to produce path diagrams for the proposed structural model. This suggests that the proposed paths are not appropriate for the total sample of students. One possible reason for a lack of fit for the proposed model could be that there are actual ethnic differences that do not allow the factors to load correctly on their latent variables when combined into a total sample to

test a single model. A second possible explanation could be that there is a significant amount of co-linearity between the observed and latent variables causing the errors produced by the LISREL program (i.e., negative error covariance and not a positive definite). It is most likely that the measurement models have been misspecified and should be restructured in order to determine if there is an alternative structural model.

Alternative measurement models. An alternative model was developed based on theory and previous research findings regarding the observed variables in the study. However, before a new model could be tested, it was necessary to restructure the measurement models and test them for accuracy. The alternative measurement model only allowed for observed measures within a latent to correlate. The measures that correlated in the alternative model were mastery- and performance- approach and mastery- and performance- avoidance. The self-evaluation latent variable was also removed from the alternative model due to the warnings it produced and the negative measurement error and R^2 coefficient. The final measurement model was found to have a decent fit before proceeding to test the alternative structural model.

Alternative structural model. After establishing an alternative measurement model for the total sample, structural paths were added to the syntax to test the structural model. A path was added from motivation to goals. Also, paths were added from the motivation and goals latent variables to achievement. There was a negative path coefficient from motivation to achievement suggesting that motivation may be strongly related to achievement via goal orientation. Therefore, the path directly to achievement from motivation was removed. The final alternative structural model (Figure 5) illustrated positive direct relationships between motivation and goal orientation and goal orientation and achievement.

Research Question 2

When examined separately, what are the similarities and differences in the fit of the proposed model between the African American sample and the Caucasian sample?

Measurement models. To address research question 2, a null model was created for each ethnic sample to compare the modified models to in order to determine whether or not there was significant change in a model when a modification was made. Examining the null model for each ethnicity illustrated that the strongest measures for their respective latent variables were ELA CRCT scores (achievement), mastery-approach (motivation), and academic self-efficacy (self-evaluation). Each null measurement model required one modification. These modifications were suggested by the LISREL program and were coherent with previous research findings. However, the modifications made for the two samples differed. Performance approach and mastery approach were correlated for the Caucasian sample, whereas performance avoidance and mastery avoidance correlated for the African American sample. After the modifications were made, it was noted that the measurement models were not completely acceptable and that they may have been misspecified. However, in an attempt to answer the research question, the structural relationships were entered and tested.

Structural models. After a measurement model was established for the African American and Caucasian samples, the proposed structural model was tested with both samples. Results indicated that self-evaluation does not contribute to achievement for African American or Caucasian students. The proposed model suggested that self-evaluation and motivation would be directly related to academic achievement, but this model does not define the relationships between the latent variables for both African American and Caucasian students. It was also proposed that a relationship exists between motivation and self-evaluation. However, there were

problems allowing these relationships to exist for both samples. A path diagram was not produced for the Caucasian sample when the LISREL program was run with the proposed structural relationships added to the syntax. Although a model was produced for the African American sample, the modifications suggested that observed variables be correlated across latent variables, which indicates that the measurement models may be misspecified. Overall, it was determined that the proposed model was not appropriate for the sample and the latent variables initially defined were misspecified, as there were errors in running the structural models suggesting that there was co-linearity among the variables.

Alternative models. Because the proposed model was not a good fit for either sample, an alternative model was tested. However, it was necessary to redevelop the latent variables to better fit theoretical perspectives on motivation. The alternative models were composed of four latent variables: self-evaluation (self-esteem), goals (performance -approach and -avoidance & mastery -approach and -avoidance), motivation (academic hope & academic self-efficacy), and achievement (GPA & CRCT scores). The alternative measurement models were similar but contained some variability. The structural models also had similar structure but differences in the values of the R^2 coefficients, path coefficients, and factor loadings.

Similarities. Similarities found between the samples were mainly found in the structure of the overall model. Goals were found to be directly related to achievement and motivation for both samples. The self-evaluation latent variable contributed to motivation more than goals for both samples, but was related positively to both latent variables. However, there was a difference in the strength of the path from self-evaluation to goals by ethnicity.

Within the measurement models, there were similarities in terms of which variables were strongest for the latent variables. In both samples ELA CRCT, mastery-approach, and academic

self-efficacy were the strongest observed variables for their respective latent variables. These variables were set to one for both samples throughout model testing and continued to account for the most variance and have the highest loadings for the respective latent variable.

Research Question 2a

If the models differ in terms of fit for the African American and Caucasian samples, where are the differences?

Initial analysis revealed significant differences between ethnicities for the Math, Reading, and ELA CRCT scores, as well as academic self-efficacy, with Caucasian students' scores being higher than the African American students' scores. No significant differences for ethnicity were present for any of the other measures. Beyond general statistics, there were differences found between the fit of the proposed model for the African American and Caucasian samples in examining the measurement models and the structural models.

Measurement models and the observed variables. In developing the measurement model for the samples, there were differences in the strengths of the factor loadings for all of the variables. Although most were in the same direction, some variables appeared to be stronger and accounted for more variance for one group compared to the other. For example, there was a slight difference in the amount of variance that the performance-avoidance and ELA CRCT variables accounted for, as the R^2 coefficient was moderate for the Caucasian sample and low for the African American sample. Also, there was a difference in the strength of the performance approach variable by each sample, with the initial R^2 coefficient = 0.68 for the African American sample and R^2 coefficient = 0.47 for the Caucasian sample. This suggests that performance-approach accounted for more variance in the African American sample than it did in the Caucasian sample.

Structural models: Latent variables and fit indices. The proposed structural model was constructed and tested using both samples' data. The program was unable to produce a path diagram for the Caucasian sample and the African American model did not have fit indices that met fit standards for the model it produced. Also, for the African American model, the modifications suggested indicated that the proposed measurement models were misspecified. Therefore, additional modifications were made and alternative models were tested.

Within the final alternative model, there were differences in the paths between motivation and achievement. There was a direct path from motivation to achievement for the Caucasian sample. However, this relationship was mediated through goals for the African American sample. This suggests that motivation appears to affect achievement differently for different ethnicities. Particularly, it is more likely that the African American students will base their achievement on the attainment of goals, whereas Caucasian students relate achievement more significantly with the agency to achieve one's goals, as agency is significantly related to ethnic identity (Adelabu, 2008). Additionally, the path from goals to achievement was much stronger for the African American sample than for the Caucasian sample, which supports the possibility that agency is more important for Caucasian students than for African American students.

A Comparison to Previous Research

The results of the current study in which the proposed model does not define the relationships between the motivation, self-evaluation, and academic achievement latent variables can be compared to previous research in a number of ways. In terms of causal research, the lack of relationships between the self-evaluation latent variable and motivation and academic achievement latent variables for all samples (total, African American, and Caucasian) provides support for the theory that self-beliefs, such as self-esteem, do not directly affect achievement

but may be indirectly related (Hailikari, et. al, 2008; Fenollar, et. al, 2007). The direct relationships found between goals and achievement in all models promotes the predictive power of goal orientation on academic achievement established by previous research (Elliott, 1999; Elliot & Church, 1997; Harackiewicz, Barron & Elliott, 1998; Lopez, 1999; Tanaka & Yamauchi, 2000; Urdan, 2004). Additionally, the relationships between motivation and achievement for the total sample and the Caucasian sample are supportive of previous research as motivation was found to account for much of the variance in predicting academic achievement (Byrnes & Miller, 2007; Faircloth & Hamm, 2005).

Observed Variables

The specific observed variables that were used in the current study were chosen for their previous relationships with one another and academic achievement. Using previous research outcomes, a proposed model was established to be tested with a total sample and separate ethnic samples. With this in mind, the relationships between many of the observed variables can be compared to previous research.

Motivation. In examining the motivation observed variables, it should be noted that many relationships that were found in the current research are consistent with previous findings. First, in terms of goal orientation, there were significant positive relationships between mastery and grades (Pintrich, 2000b) and mastery and self-efficacy (Pintrich, 2000b; Malpass, et al., 1999). Previous findings indicating the positive effects of performance approach on achievement (Harackiewicz, et. al, 1999) were also replicated as performance approach was more strongly endorsed by African American adolescents compared to mastery approach (Bong, 2009) during individual measurement model testing. The other motivational variable used, academic hope, also illustrated a positive relationship with academic achievement as previously found (Leeson,

et. al, 2008) but were not as strong as the relationship between the goal orientation measures and academic achievement. The results imply that a student's goal orientation may be more predictive of achievement for African American students than other measures previously suggested to be strong predictors of achievement, such as academic hope and self-efficacy. However, this study does not include all possible motivation factors that may contribute to achievement outcomes and results differed by ethnicity.

Findings that are not consistent with previous research are the positive correlations between mastery-avoidance and performance-avoidance with measure of academic achievement. More significant relationships were identified between performance avoidance and achievement than for mastery-avoidance. However, it is unusual that such positive relationships exist. Possible reasons for the relationships may be based on the ratings of the participants. There is a possibility that students uniformly rated the avoidance measures similar to the approach measures. The results appear to specific to the population surveyed and may need to be evaluated again in the future to consider the positive effects of the avoidance measures when the performance measures are strong for an individual.

Self-evaluation. Within the self-evaluation area, self-efficacy (general and academic) was found to have a positive and significant relationship with measures of academic achievement as it has in the past (Malka & Covington, 2005; Bong, 2001). Self-efficacy's positive relationship with hope (Magaletta & Oliver, 1999) was also replicated. Another major finding that was consistent with previous research was the significant relationship between self-esteem and self-efficacy (Bandura, 1977; Baumeister, et al., 2003; Judge, et al., 2002; McFarlin, et al., 1984). Self-esteem was also found to be significant correlated with hope (Snyder, et al., 1991) and the approach goals (Diener & Dweck, 1978; Malpass, et al., 1999) as in the literature.

Gender and ethnicity. Gender differences were found for the measures of achievement and performance approach using MANOVA procedures. Results indicated that females had higher scores and responses than males. Multivariate analysis of variance also indicated that there were significant differences for ethnicity. Specific differences were noted for ethnicity on measures of achievement including Math, Reading, and ELA CRCT scores as well as academic self-efficacy. Caucasians outperformed African Americans on each of these measures of academic achievement and reported higher levels of academic self-efficacy. Previous research using standardized tests of reading and math has consistently indicated, and continues to illustrate, that Caucasian student outperform their minority counterparts, particularly African Americans and Hispanics (NAEP, 2004).

Socioeconomic status. There was a significant difference between ethnicities in terms of socioeconomic status for father's occupation. Results indicated that Caucasian students reported their fathers as having higher level occupational positions than African American students reported. The African American students indicated, based on the average, that their fathers were in the occupation of protective and personal services (i.e., police officer, barber, etc.), whereas the Caucasian students indicated that their fathers were associate level professionals (i.e., youth workers, pastors, etc.).

Although there was a significant finding, few students completed the parent and grandparent occupation items and therefore MANOVA results of socioeconomic differences were based on only 35 student responses. However, this finding still lends a great deal of information to the literature as many studies do not account for SES. Of the studies that do consider SES, many are middle-class studies conducted with a predominantly Caucasian population. Therefore, any research with a diverse population of individuals provides the

literature with more information to base future research on. In this case, it is suggested that it would behoove researchers to use measures of socioeconomic status to rule it out as a possible confounding factor.

Implications

The results of this study have theoretical implications. Motivation theory supports the general idea that individuals require motivation, whether competence motivation or achievement motivation, in order to achieve school success (Sternberg, 2005). As noted previously, this study has replicated a number of findings by previous research that support the ideas put forth by motivation theory. Motivation research also implies that achievement-motivated individuals are driven by internal feelings of fear of failure and hope of success (McClelland, 1953). These are directly related to goal orientations, which were found to be the best measures of motivation within the study and therefore appear to be the best predictors of academic achievement. Thus, the current research supports motivation theory and the need for positive motivation in order to achieve.

Motivation literature does have some limitations in terms of how constructs should be operationalized (Elliot & Dweck, 2005). This appears to also have been encountered in the current study as self-evaluation was difficult to measure effectively. Therefore, there may be a need in future research for better development of some of the constructs before they can be interpreted in a structural model to determine their effects on achievement.

This study also has implications for future research, as it can use the current findings to improve the measurement of the self and motivation constructs. As noted previously, the self-evaluation construct was difficult to measure using only one observed variable for some of the samples. Also, this study lends knowledge to other researchers in terms of self-efficacy. Self-

efficacy is considered to be one type of motivation (Bandura, 1977). Therefore, it may be necessary to consider self-efficacy in terms of motivation and not as a measure of self-evaluation. When it was part of a latent variable with academic hope, it performed much better and appeared to explain more about motivation than it was as a measure of self-evaluation.

Practically speaking, this study lends information that can support the development of an intervention program to be used in the schools to assist students in improving motivation and thus academic achievement. The current study suggests that goal orientation is a significant factor in an individual's motivation. Therefore, goal orientation, with a focus on intrinsic and implicit motives, should play a central role in the development of an intervention program.

Adolescents tend to have performance-approach goals (Bong, 2009) that, although result in positive short term outcomes, can be detrimental to later life outcomes because the individual will no longer have a 'reason' to perform tasks. It is likely that students adopt performance-approach goals in adolescence because of the stresses put on them by the education system. Students in grades five through twelve are pressured with passing assessments to be promoted to the next grade, improve school ratings, and illustrate that the educational standards are being met. This can have negative effects on students as failure to meet a set criteria can reduce a student's motivation to achieve. Therefore, although the current study focused on ninth grade students, it may be necessary to intervene at an earlier age and possibly prevent decreased motivation later in one's school career.

Mastery-approach goals should be the focus of intervention for all age groups. Mastery-approach goals are endorsed more frequently by children (Bong, 2009) and result in more positive learning outcomes (Urduan & Turner, 2005) when endorsed. Mastery-orientation is predictive of better grades (Mehlbach, 2006), enjoyment of learning, hope and pride in

undergraduates (Pekrun, Elliot, & Maier, 2006) and is supported by researchers to be better developed in classrooms (Ames, 1992; Maher & Midgley, 1991; Midgley & Urdan, 1992). Overall, developing mastery approach goals in classrooms can provide individuals with the internal drive to master tasks for their own benefit, which can ultimately lead to long term learners with goals that can be carried through into adulthood.

Limitations

There are limitations to this study. First, although the study had an appropriate number of participants overall to conduct SEM analysis, the sample of Caucasian students was much smaller than the sample of African American students. This could have affected the correlation data, model fit statistics, and the overall model in general. In fact, the SEM results for the Caucasian sample should be interpreted with caution as the sample size was not as large as proposed according to SEM research. With a greater number of Caucasian students, it may be possible for both samples to be compared more reasonably. Due to the overall number of participants based on a poor participation rate and a large amount of missing data which forced the researcher to delete participant responses, there may be limitations to the generalizability of this study to a wider population of individuals.

Also, the results may not be applicable to a high SES population. There were very few individuals who completed the information about socioeconomic status. Therefore, as well as being descriptive of a low- to middle-class population, socioeconomic status may be a confounding factor that could not be addressed due to the missing data. There were significant differences for socioeconomic status that should be examined in future research in an attempt to identify differences based on socioeconomic status.

In addition to the possibility of SES being a confounding factor, it is also possible that gender differences and ethnic differences were not examined thoroughly enough. There were not enough participants to create structural models for males and females by ethnicity. Therefore, it can not be determined with certainty that males and females from different ethnic backgrounds follow the proposed models presented in the results section.

Another limitation to consider is the fact that this research project did not account for all possible factors that contribute to academic achievement. For example, there is research that suggests ethnic identity can affect motivation and may play a role in students' achievement (Campbell, Barry, Joe, & Finney, 2008; Freeman, Gutman, & Midgley, 2002; Graham & Hudley, 2005). Also, it was not possible to examine the effects of general self-efficacy on achievement because there was too much missing data that could not be fixed using suggested techniques to fill in missing values when using SEM. Obtaining enough data to examine general self-efficacy may affect future research in this area.

The measurement of self-evaluations may need to be considered in future research. The fact that the self-evaluation latent variable did not include measures that accounted for a significant amount of variance for all of the samples suggests that there may be additional factors that contribute to how an individual evaluates oneself. These may include parental support and involvement, self-regulation, and student beliefs about teacher perceptions.

Future Directions

Results of the current study also provide suggestions for future research. It is recommended that future research conducts additional analysis to examine the predictability of the motivational factors on achievement. By further examining the predictability of motivational factors, including mastery and performance orientations, academic hope, and academic self-

efficacy, researchers may be able to create better fitting models that illustrate the relationship between motivation and academic achievement. Additional research also needs to be conducted with measures of academic hope in order to further develop the reliability and validity of the measure and investigate the intercorrelations between academic hope and other measures of motivation and academic achievement.

Additional research should also consider conducting longitudinal studies to determine if motivation and self factors change with age and grade. Due to the known differences in goal orientations based on age, there may be a need to further investigate the possible differences of other measures due to age and/or grade. This may be of importance because many studies conducted only use adolescent populations and therefore cannot provide information on or illustrate practical implications for younger individuals.

Future research may also consider examining the similarities and differences among a wider range of ethnicities. Unfortunately, this was not possible for the current study due to the limited number of individuals of other ethnicities in the area where data was collected. Gathering data on multiple ethnicities can provide information on which variables affect achievement for specific ethnic groups and indicate what factors are consistent in affecting achievement across groups. This information can ultimately change the way educators and researchers attempt to address achievement in research and in the classroom.

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Appendix A

Student Name: _____

(Student names will be discarded after all data on the student is gathered.)

Student Information

Participant Number: _____ Age: _____ Gender (circle one): M F

Grade: _____ School: _____

Directions: <i>Identify the grades you usually make in each of the following classes.</i>	Mostly D's	About half C's and lower	Mostly C's	About half B's and half C's	Mostly B's	About half A's and half B's	Mostly A's
English Classes	1	2	3	4	5	6	7
Math Classes	1	2	3	4	5	6	7
Science Classes	1	2	3	4	5	6	7
Social Studies Classes	1	2	3	4	5	6	7

Please write in the following information:

Mother's occupation _____

Grandfather's occupation _____

Grandmother's occupation _____

Father's occupation _____

Grandfather's occupation _____

Grandmother's occupation _____

I am eligible to receive (circle one): free lunch reduced lunch neither free or reduced lunch

FOR OFFICIAL USE ONLY	
Grade Point Average	
CRCT Scores	
Math	
Reading	
ELA	

ACADEMIC HOPE

Directions: Please take a moment to think about your schooling or education. Once you have this area of your life in mind, read each item and insert the number (from 1 to 8) that best fits you.

1 = Definitely False 2 = Mostly False 3 = Somewhat False 4 = Slightly False 5 = Slightly True 6 = Somewhat True 7 = Mostly True 8 = Definitely True

1. _____ I can think of many ways to make good grades.
2. _____ I actively pursue my school work.
3. _____ There are several ways to meet the challenges of any class.
4. _____ I am motivated to do well in school.
5. _____ I can think of ways to do well in school.
6. _____ I am energized when it comes to my school work.
7. _____ There is usually more than one path to get the grades that I want.
8. _____ I can find ways to get grades that I want in school.
9. _____ Solutions are usually available to me when doing class work.
10. _____ There are solutions to my homework problems.
11. _____ My goal is to do well in classes that are important to me.
12. _____ My goal is to graduate high school.
13. _____ My goal is to continue education beyond high school.
14. _____ I get very psyched up about school work and classes.
15. _____ I'm discouraged about my future in school.
16. _____ I actively pursue my educational goals.
17. _____ I have many academic goals
18. _____ I can think of specific ways to do well in my classes.
19. _____ I take classes that are challenging to me.
20. _____ I know of many strategies I can use to succeed in my classes.
21. _____ Thinking about pursuing my goals in school fills me with energy.
22. _____ The educational goals I have set for myself are clear and well defined.

SELF-EFFICACY

Directions: Read each item carefully. Using the scale shown below, please select the number that YOU most agree with and put that number in the blank provided.

1 = Strongly Disagree 2= Mostly Disagree 3= Somewhat Disagree 4= Slightly Agree
5= Slightly Agree 6= Somewhat Agree 7= Definitely Agree

- ____ 1. When I make plans, I am certain I can make them work.
- ____ 2. One of my problems is that I cannot get down to work when I should.
- ____ 3. If I can't do a job the first time, I keep trying until I can.
- ____ 4. When I set important goals for myself, I rarely achieve them.
- ____ 5. I give up on things before completing them.
- ____ 6. I avoid facing difficulties.
- ____ 7. If something looks too complicated, I will not even bother to try it.

ETHNIC IDENTITY

In this country, people come from many different countries and cultures, and there are many different words to describe the different backgrounds or ethnic groups that people come from. Some examples of the names of ethnic groups are Hispanic or Latino, Black or African American, Asian American, Chinese, Filipino, American Indian, Mexican American, Caucasian or White, Italian American, and many others. These questions are about your ethnicity or your ethnic group and how you feel about it or react to it.

Please fill in: In terms of ethnic group, I consider myself to be

Directions: Use the numbers below to indicate how much you agree or disagree with each statement.

1= Strongly Disagree

2= Disagree

3= Agree

4= Strongly Agree

- _____ 1. I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.
- _____ 2. I am active in organizations or social groups that include mostly members of my own ethnic group.
- _____ 3. I have a clear sense of my ethnic background and what it means for me.
- _____ 4. I think a lot about how my life will be affected by my ethnic group membership.
- _____ 5. I am happy that I am a member of the group I belong to.
- _____ 6. I have a strong sense of belonging to my own ethnic group.
- _____ 7. I understand pretty well what my ethnic group membership means to me.
- _____ 8. In order to learn more about my ethnic background, I have often talked to other people about my ethnic group.
- _____ 9. I have a lot of pride in my ethnic group.
- _____ 10. I participate in cultural practices of my own group, such as special food, music, or customs.
- _____ 11. I feel a strong attachment towards my own ethnic group.
- _____ 12. I feel good about my cultural or ethnic background.
- _____ 13. My ethnicity is: (please circle)
 - (1) Asian or Asian American, including Chinese, Japanese, and others
 - (2) Black or African American
 - (3) Hispanic or Latino, including Mexican American, Central American, and others
 - (4) White, Caucasian, Anglo, European American; not Hispanic
 - (5) American Indian/Native American
 - (6) Mixed; Parents are from two different groups
 - (7) Other (write in): _____
- _____ 14. My father's ethnicity is (use numbers above): _____
- _____ 15. My mother's ethnicity is (use numbers above): _____

Appendix B

From: jgraham@fa.ua.edu

to: raine030@bama.ua.edu

date: Tue, Feb 24, 2009 at 9:34 AM

subject: Protocol approved, Gina Raineri 586

The following human subjects protocol application has been approved by the IRB, effective 02/20/2009. In order to view the approval letter, along with the approved consent documents or other approved documents, as applicable, open the protocol and view attachments. If you have problems viewing the IRB Approval document, please call the Office for Research Compliance at 205.348.5152.

Protocol Principal Investigator: Gina Raineri

Protocol Title: Using Structural Equation Modeling to Examine Differences in Motivation, Self-Evaluation and Academic Achievement between African American and Caucasian Students

Protocol Number: 586

Submission include Principal_approval letter_1_31, Raineri 09-OR-050, Survey Revised

Appendix C

University of Alabama Parental Consent to be in a Research Study

Your child is being invited to participate in a research study. This study is called “Using Structural Equation Modeling to Examine the Differences in Motivation, Self-Evaluation, and Academic Achievement.” This study is being done by Gina Raineri, who is a doctoral student at the University of Alabama. Ms. Raineri is being supervised by Dr. Patti Harrison, who is a professor in the College of Education at the University.

The study is being conducted at the expense of the principal investigator, Ms. Raineri.

What is the study about?

The purpose of this study is to examine the relationships between motivation, self-evaluation, and academic achievement for ninth grade high school students. Little research has investigated how motivational and self-evaluative constructs are related to students’ academic achievement using structural equation modeling analysis.

Why is the study important – What good will the results do?

This knowledge is important and useful because it provides measurable and predictive factors related students’ success in the classroom. The results can provide teachers and others with ways to improve student motivation and self esteem and efficacy which may increase achievement.

Why has my child been asked to take part in this study?

Your child has been asked to be in this study because he/she is in the 9th grade, which is the target population for the study. All high schools have been asked to participate in the study in order for the researcher to obtain the needed number of student participants.

How many other people besides me will be in this study?

About 2,500 other people will be asked to participate in this study.

What will I be asked to do in this study?

If you decide to allow your child to be in this study, he/she will be asked to complete a survey about motivation, self-evaluation, and academic achievement. They will also be asked some demographic questions (age, school, gender, free/reduced lunch, parent occupation, etc.).

How much time will my child spend in this study?

Being in this study will take about 30 minutes during regular school hours in a classroom setting at a time determined by the principal. However, it may be completed on a home or other computer with internet access.

Will I or my child be paid for being in this study?

You and your child will not be paid for being in this study.

Will being in this study cost me or my child anything?

There will be no cost to you or your child except the time spent in completing the questionnaires.

Can the researcher take my child out of this study?

The researcher may take your child out of the study if she feels that your child is being upset by the questions asked.

What are the benefits (good things) that may happen to me if I am in this study?

There are no significant benefits to participating. However, this study will contribute to research about motivation and self-evaluations and their relationship to school achievement.

What are the risks (dangers or problems) from being in this study?

Not all risks are physical. The only foreseeable risk is a feeling of discomfort when answering questions on the survey which includes questions about self-beliefs, thoughts and motivation.

How will my child’s confidentiality (privacy) be protected?

Your child will provide his/her name in order to obtain Grade Point Average and Criterion Referenced Competency Tests scores from school records. However, all stored documents will contain participant or ID numbers in the place of names. Therefore, your child’s responses will not be connected to his/her name. Your child will also be asked to provide information about parent and grandparent occupations and eligibility for free/reduced lunch in order to measure socioeconomic status. However, after completion, the surveys will be kept in a locked cabinet, and data will be on a password protected computer, in the researcher’s office at the Richmond County Board of Education which is accessible only to the researcher.

What are the alternatives to being in this study?

The other choice in participation is not to participate.

What are my child’s rights as a participant?

This study is strictly voluntary – it is your free choice. You and your child may choose not to take part at all. If your child begins the study, he/she is free to stop at any time without any penalty or loss of benefits you would otherwise receive. However, your child’s name will be removed from the drawing.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?

If you have questions or problems about this study right now, please ask them. If you have questions about this study later on, please call the investigator Gina Raineri at 706-826-1131 or raine030@bama.ua.edu, or the investigator’s advisor, Dr. Patti Harrison at pharriso@bamaed.ua.edu. If you have any questions about your child’s rights as a research participant you may contact Ms. Tanta Myles, The University of Alabama Research Compliance Officer, at (205) 348-5152.

I have read the consent form. I understand what my child will be asked to do. I freely agree to allow him/her to participate. I will be given a copy of this consent form to keep.

Parent/Guardian Signature

Date

Child’s Name: _____

Check here () and provide an address or email if you would like to be informed of the results of this study:

Investigator

Date

Appendix D

The University of Alabama Student Assent to Participate in a Research Study

I have been informed of the procedures to be used in this study. I understand that the purpose of this study is to examine the relationships between motivation, self-evaluation, and academic achievement for ninth grade high school students. This knowledge is important and useful because it provides measurable and predictive factors related students' success in the classroom.

The required participation time will be approximately 30 minutes or less. As a participant, I will be asked to respond to several questionnaires. This will take place during regular school hours at a time decided on by the principal in a computer lab. However, if I choose, I may complete the survey outside of school by accessing the web address I was administered.

I understand that the only foreseeable risk is a feeling of discomfort when answering questions on the survey about self-beliefs, thoughts and motivation. I understand that the study is strictly voluntary – it is my free choice. I may choose not to take part at all. I am free to stop at any time without any penalty.

I understand I will not be paid for being in this study and there is no cost to participate except the time spent in completing the questionnaires. I understand that there are no direct benefits for me. Society may benefit from the information provided about the research knowledge in this area.

I understand that all information I provide will be kept completely confidential.

I have the opportunity to ask any questions about what to expect. I may contact Gina Raineri at 706-826-1131 or raine030@bama.ua.edu or her advisor, Dr. Patti Harrison at pharriso@bamaed.ua.edu to further inquire about the research or any other procedures related to the study now or later. I may also contact Ms. Tanta Myles, University of Alabama Research Compliance Officer at (205) 348-5152 to inquire about research participants' rights.

I agree to participate. I understand that I am completely free to quit at any time for any reason without being punished or losing privileges I am usually allowed.

X

Signature

Date

Appendix E

February 25, 2009

Dear Ms. Raineri:

I am pleased to inform you that the Superintendent has approved your request for research. This approval simply means that you are able to conduct your research as described in your application.

Please note:

- your research cannot deviate from your *Request for Research* application that has been approved by the Superintendent of Schools;
- if your request involves working with any County Schools, staff, and/or students, no research can be conducted prior to receiving building-level administrator's approval;
- no research is to be conducted that interferes with instructional priorities;
- if students, parents, administrator, and/or staff will be involved with your research, you must have proper written permission(s);
- any and all costs associated with your research are your responsibility;
- a final copy of your research is to be submitted to the Board of Education's Office of Student Services;
- this approval is subject to revocation or modification at any time for cause by the Superintendent of Schools.

The Student Services Office is maintaining a copy of your approved research application which is available for review by School System personnel.

Sincerely,

Director of Student Services

Appendix F

Dear Principal,

I am seeking your approval to conduct research at your school. This research will (a) discover how self-esteem, self-efficacy, goal orientation, academic hope, and academic achievement are related and (b) illustrate whether or not there are differences between how self-esteem, self-efficacy, goal orientation, and academic hope affect academic achievement for different ethnicities. It will be conducted with 9th grade in County high schools. Participation is strictly voluntary. All responses will be confidential. Parent permission forms will be sent home. This permission form will include permission to access student records in order to obtain GPA and CRCT scores as measures of academic achievement. When permission is returned, the surveys will be completed in school. They can be administered via computer, which may speed up administration, or through pencil and paper format. The survey should take no longer than 30 minutes to complete. There are no foreseeable risks to students participating. Incentives will be available to encourage participation with your approval and approval of the teachers. Students will receive a debriefing statement at the conclusion of the study and parents and students may provide contact information if they would like to receive the findings of the overall study.

This research is important because it provides measurable and predictive causes of students' success in the classroom that has not yet been examined. In particular, this research can guide future research in developing models of achievement that can ultimately provide teachers and school psychologists in Richmond County with techniques to implement in the classroom and school environment to boost achievement in all students.

Thank you for your consideration.

Sincerely,

Gina Raineri

As principal of _____, I agree to allow the students in this school to participate in the research study presented to me by Gina Raineri, the principal investigator.

Principal's Signature

Date

Appendix G

Research Script for Participation and Permission

Teacher, please read the following:

You are being asked to participate in a study that examines the relationships between motivation, self-evaluation, and academic achievement for ninth grade high school students. This knowledge is important and useful because it provides measurable and predictive factors related students' success in the classroom.

You will be asked to complete several measures concerning how you feel about school, your abilities, and your self-beliefs. You will have the opportunity to complete the survey in school or take it home. It should take no longer than 30 minutes.

The only foreseeable risk is a possible feeling of discomfort when answering questions on the survey about self-beliefs, thoughts and motivation. The study is strictly voluntary. You may choose not to take part at all or stop at any time without penalty.

There are no direct benefits or costs to participating.

All information you provide will be kept completely confidential.

If you are interested in participating you must have the permission slip I am going to hand out signed by your parent or guardian and return it to me by (INSERT DATE).

Thank you in advance for your participation.

Contact information for the researcher is on the permission slip if there are any questions about the study.

Appendix H

Research Script for Completing the Survey

Teacher, please read the following:

Thank you for agreeing to participate in this research. After receiving your survey, please read the assent form attached to the front and sign your name if you agree to participate and feel you have been informed of the study.

You will be completing several measures concerning how you feel about school, your abilities, and your self-beliefs. Please read each question carefully and respond in an honest and truthful manner.

If you are uncomfortable completing any items you may skip them or choose to stop at any time.

All information you provide will be kept completely confidential.

Thank you for your participation.