ABSTRACT

Title of dissertation: THE CONTRIBUTIONS OF EXPECTANCY VALUE THEORY AND SPECIAL EDUCATION STATUS TO READING ACHIEVMENT OF AFRICAN AMERICAN ADOLESCENTS

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In light of concerns about decreased academic motivation among adolescents and the subsequent lack of achievement, particularly among African American students and those with learning disabilities, this study examined adolescent motivation for academic achievement and future course enrollment intentions. Expectancy-value motivation has been extensively explored with European American adolescents without learning disabilities; the associated constructs of this theory are positively correlated with GPA, classroom-based assessments, and future course enrollment and employment. Limitations of the extant literature included homogeneous samples, limited reliability and validity of academic achievement measures, and a lack of control of extraneous variables. Using exploratory factor analysis and structural equation modeling, I found that the expectancies for success/perceived ability, importance value, and intrinsic value latent factor models of expectancy-value motivation for a sample of urban African American adolescents do not differ from those for their European American peers; however, the

constructs themselves have different relationships with the two dependent variables, reading achievement on a standardized assessment and future enrollment intentions. Motivation latent factors did not predict reading achievement when SES, prior achievement, and gender were in the analysis. However, all motivation constructs were significant predictors when enrollment intentions constituted the dependent variable. Additionally, the IEP reading goal variable (learner status) was not a significant predictor of either dependent variable. These results are discussed in light of the limitations of the study. Finally, areas for further research are suggested.

THE CONTRIBUTIONS OF EXPECTANCY VALUE THEORY AND SPECIAL EDUCATION STATUS TO READING ACHIEVMENT OF AFRICAN AMERICAN ADOLESCENTS

by

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Chapter 1

STATEMENT OF THE PROBLEM

The study of motivation has become increasingly important (Murphy & Alexander, 2000) because attracting and maintaining student interest is essential to academic success (Wigfield & Wagner, 2005). In studies that explore the relationship between motivation and achievement, researchers report that there is a significant, positive correlation between levels of motivation and academic achievement (Giota, 2002; Jacobs et al., 2002) as well as course enrollment intentions (Crombie et al., 2005; Durik, Vida, & Eccles, 2006 Nagy, et al., 2006). Both short term and longitudinal studies have furthered understanding about how student motivation evolves over the course of a school career in response to changes in cognition, social environments, and self-evaluation (Crombie et al; Vansteenkiste et al., 2004; Watt, 2008). However, few studies have explored this relationship in light of the specific needs of African American adolescents and/or students with disabilities. These subgroups of students are at greater risk of academic failure (www.nlts2.org/fact_sheets/nlts2_fact_sheet_2005_11.pdf; http://www.americaspromise.org/Our-Work/Dropout-Prevention/~/media/Files/Our%20Work/Dropout%20Prevention/Cities%20in%20Crisis/Cities_In_Crisis_Report_2009.ashx) thus, a focus on these populations of students may inform our understanding of noncognitive factors associated with achievement. There are also a very limited number of studies that have used dependent academic variables that are adequate measures of the construct of academic achievement. Instead, typical measures, which can be valid and reliable, include tests given for class placement,

graduation requirements, or promotion. The purpose of this study is to determine if the constructs of a specific theory of motivation, expectancy-value motivation, can help to explain how African American adolescents with and without documented reading goals on Individual Education Plans perform on a reading assessment and a measure of enrollment intentions.

Rationale and Significance

The study of adolescent motivation as it relates to academic outcomes and future enrollment intentions is of particular significance because high stakes assessments have become increasingly popular measures of student achievement and dropout rates remain high, particularly for non-dominant populations such as African American students (Stillwell, 2010) and students with learning disabilities (U.S. Department of Education, 2005) compared with their non-disabled, majority-culture peers. Failing to graduate or graduating with a non-standard diploma can directly influence access to the military, colleges, and higher-paying employment, thereby permanently limiting post-secondary academic and career opportunities (Gaumer Erikson et al., 2007). Dropout rates differ considerably based on race/ethnicity, school mobility, age, socio-economic level, teacher and parental expectations, and school minority (non-Caucasian) population (Dalton, Glennie, & Ingels, 2009). These observations have led researchers to question the reasons behind students' successes and failures and to investigate causes both within and outside of the academic context. This study provides insight through the lens of expectancy-value theory into students' motivation for performing well on an academic assessment task.

Studies that have purposefully included African American youth have not clearly or definitively delineated the relationship between motivation and the successful

completion of academic achievement using tasks such as standardized assessments or graduation requirements. Similarly, research that focuses specifically on motivation and the concurrent or subsequent academic achievement and enrollment intentions of students with special education needs, particularly those with documented learning needs including LD, is timely and necessary as adolescents contend with the consequences of performance on standardized assessments. Although there is an increased inclusion of students with LD in classrooms and assessment settings (Newman, 2006) there has been little research concerning how motivated these students might be to engage in assessments and to perform well on them, although studies have also shown that students with LD do not always benefit from attending classes with their non-disabled peers (Newman). Given the need to investigate the factors that explain adolescent performance on assessments, the remainder of this chapter (a) introduces the theory of expectancy-value motivation as a framework relevant to African American adolescents and students with LD and (b) briefly reviews three theoretical concepts believed to influence these groups' performance on academic tasks.

Adolescence and Expectancy Value Motivation

Expectancy-value theory states that students' expectancies for success and the type and amount of value they place on tasks that lead to achieving success are the most important indicators of whether or not students will complete the task proficiently and can predict future academic choices such as course or college enrollment (Wigfield, 1994; Figure 1). Although there are many theories of motivation, expectancy-value motivation is particularly relevant to adolescents because it is at this developmental stage that students are able to evaluate themselves, their probability of success, and the value of

the task in attaining social standing or recognition. This theory is often tested and applied in studies of secondary and undergraduate students because developmentally, adolescents are able to create independent views about the tasks they are asked to complete and are also able to provide explanations for their expectancy for success in that task. They are also more capable of performing the metacognitive tasks that influence motivation. Societal stereotypes, prior experiences, and perceptions of others' expectations of them help students to create their goals and reinforce their sense of perceived ability, i.e., ability to proficiently complete the tasks that lead to the goal (Wigfield & Eccles, 2000; Eccles, 2005a). From there, adolescents create expectations for success ("I can/cannot complete this task successfully") and decide whether or not the task is worth the time (*cost value),* satisfaction (*intrinsic value),* challenge, and potential rewards (*utility value, attainment value*) it poses. Understanding the role motivation plays in students' performance in assessment settings can provide insight into how to best assist adolescents as they face challenging situations.

The transition to middle or junior high school is frequently the socially and culturally recognized onset of adolescence in the United States. Studies of motivation at this transition as well as the transition to high school have been conducted with both African American and European American participants, primarily of middle class backgrounds (Gutman, 2006; Gutman & Midgley, 2000; Kiefer & Ryan, 2008); motivation, in the majority of cases, decreases across these changes. While undergoing considerable physical, emotional, and social changes, adolescents begin depending less on their parents and more on their peers, endure hormonal fluctuations, and experience new behaviors, such as truancy, test anxiety, and dropping out of school (Eccles et al.,

1993). This is a time of exploring and eventually forming an identity based on self-perception and adopted values (Harter, 1999). Generally, although competence beliefs, which are usually defined by peer comparisons, become more stable and accurate during adolescence, they are at lower levels than during elementary school years and do continually decline (Wigfield & Wagner, 2005). Self-efficacy, or the individual's beliefs in her ability to complete a task, however, stays the same or even increases as students comes to understand their capabilities. During adolescence, gender, racial and/or ethnic identity also aids in the development of a self, which turn may contribute to or detract from academic tasks (Graham & Hudley, 2005; Hyde & Durik, 2005). Wigfield and Wagner (2005) suggest that competence beliefs and motivation for academic tasks decrease because of social comparisons, the newly acquired capacity to self-critique, declining interest in the assignments presented in middle and high school, a change from individual mastery orientation to classroom performance orientation due to testing and ability-grouping, and the superseding of social networking over school-related achievement.

Generally, the relationship between task values and academic achievement is less studied than that of expectancies for success or perceived ability. Researchers have suggested that when students intrinsically value a task, they are more likely to pursue courses or careers in which they can use the acquired ability (Watt, 2006). For example, female students need a high utility value of math to pursue a math-related career, but males need only a moderate utility value of the subject to follow a math-based professional path (Watt). Conversely, other authors report that intrinsic value and utility value are not significant predictors of achievement for females, although significant for

males (DeBacker & Nelson, 1999), and that although intrinsic value predicts course enrollment and leisurely reading, it does not predict career aspirations (Durik et al., 2006). When comparing the significance of task values against self-efficacy on academic variables, the latter has a greater impact. Steinmayr and Spinath (2009) found that although both constructs were important, self-concepts explained more variance than task values. Berndt and Miller (1990) came to similar conclusions, finding both constructs significant, but expectancies for success in math and English more strongly related to domain-specific achievement than task values.

African American Adolescents

In a seminal review of studies of African American adolescent motivation conducted before 1990, Graham (1994) argued that research did not support the perception that African American students had lower expectancies for success or self-concepts of ability than their dominant culture peers. In fact, African American students had the same expectancies for success and levels of self-concepts of ability; she suggested that this was a protective factor that helped to shield students from negative environments. Protective factors, including levels of cultural mistrust (Irving & Hudley, 2005), ethnic identity (Kerpelman, Eryigit, & Stephens, 2008; Yasui, Dorham, & Dishion, 2004), parental support and influence (Friedel, Cortina, Turner, & Midgley, 2010; Gutman, 2006; Jodl et al., 2001; Kerpelman et al., 2008) and perceptions of barriers during and after formal schooling (Taylor & Graham, 2007) have been studied more frequently in the African American student population than other social or academic motivation constructs. Those who have studied motivation constructs suggest that mastery goal orientation might help students as they transition to high school

(Gutman, 2006). The results of these studies suggest that African American adolescents are academically motivated when they perceive support, have high levels of ethnic identity explain, and report low levels of cultural mistrust.

In one of the few studies analyzing expectancy-value motivation constructs and academic outcomes with African Americans, Eccles, Wong, and Peck (2006) investigated how racial discrimination influences African American students' academic motivation and how that motivation in turn affects academic achievement. The authors found that students' perceptions of daily experiences of racial discrimination predicted lower motivation and GPA; peers' racial discrimination undermined only the valuing of school, but teacher prejudice impacted both valuing of school and self-concept of ability. Jodl et al. (2001) used expectancy-value theory to analyze how parents' attitudes moderated the relationship between student achievement values and self-perceptions and occupational aspirations (academic and athletic). In the academic model, parents' values and beliefs directly predicted their children's beliefs, but only students' educational and occupational aspirations, not perceptions of ability or academic values or parent beliefs, predicted professional career aspirations, a finding different from those found with a homogeneous European American sample.

Disability Status

Students *without* LD have been the focus of a number of expectancy- value motivation studies that have confirmed the relationships between perceived ability, expectancies for success, and academic achievement and enrollment intentions, whether in a global context (Bassi et al., 2007; Long et al., 2007) or in specific subjects, such as in math (Crombie et al., 2005; Watt, 2006) or German (Steinmayr & Spinath, 2009).

Expectancies for success in specific domains share this positive relationship with student achievement (Berndt & Miller, 1990). Gender is also correlated with self-efficacy, perceived ability, and expectancies for success. Crombie et al. found that for females, future course enrollment in math was positively linked to competency beliefs, but this was not so for males, and Nagy et al. (2006) concluded that females, compared to males, tended to have higher self-concept in biology and therefore enrolled in more biology classes, whereas males had that pattern in math. Durik et al. (2006) found that ability self-concept predicted English course enrollment as well as leisurely reading time for both males and females. Overall, adolescents with higher academic self-efficacy were likely to have higher GPA's than their peers with lower levels (Long et al.).

Adolescents with LD, however, are rarely purposefully included in motivation studies, outside of those which center on self-concept and self-efficacy theories (described in greater detail in Chapter 2), that are focused on academic outcomes. Using Deci and Ryan's (1985) organismic theory of intrinsic motivation, Wiest et al. (2001) concluded that in general, students with high self-efficacy beliefs are more likely to have higher GPA's, and that students without LD are likely to have higher self-efficacy beliefs than their peers with LD. Deci et al. (1992) explored self-perceptions, as defined in Ryan, Connell, and Deci's (1985) theory of internal motivation, with students with and without LD and found that they predicted English and math grades in middle and high school. Sideridis (2005; 2006) compared students with LD with their non-disabled peers, finding correlations between goal orientation, "self-oughts", and math achievement for both groups. None of these studies used the constructs of the expectancy-value theory.

Overall, the literature on adolescents with LD is not comprehensive enough to

confidently draw conclusions about this population of students, motivational theories, and academic outcomes. Certainly, no conclusions can be drawn about the role of expectancy-value motivation, as there are no studies that have explored the relationship between students with LD and the constructs which comprise the theory. Thus, these relationships warrant more attention in the literature about adolescents, regardless of disability status.

Unique Challenges

African American Adolescents

For African American students, there are unique concerns that may influence the relationship between motivation and academic achievement. One is the *engagement-achievement paradox* (Mickelson, 1990), or the observation that African American adolescents tend to have the same expectations for success as peers with higher levels of academic achievement. From another perspective, Ogbu (1978) attempted to explain African American students' lower performance in academic settings by suggesting that students adopt an *oppositional identity* in which involuntary minorities reject the majority culture values because they perceive fewer rewards, opportunities, and benefits as well as increased negative social stigma as a result of pursuing academic success (a majority culture value). Another theory postulates that African American youth may be victims of *stereotype threat* (Steele & Aronson, 1995): members of negatively stereotyped groups who are aware of those stereotypes may fear being judged or treated according to them, which in turn affects their performance in fulfillment of the assumption. For example, students may not perform well on an academic achievement test because they fear they will confirm stereotypes about intelligence in their community. Researchers have

suggested that the relationship between motivation and academic achievement among African American adolescents can be mediated by a positive cultural or ethnic identity (Eccles etal., 2006) as well as feelings of school belonging (Goodenow & Grady, 1993), and parental support (Gutman, 2006; Jodl et al., 2001), all of which may minimize oppositional identity and/or stereotype threat. There is not an extensive body of literature that parses out how these factors influence enrollment intentions, which has not been frequently been considered as a dependent variable outside of expectancy-value theory through a lens of motivation.

Adolescents with LD

Students with LD face their own set of concerns as the inevitable challenges of adolescence are exacerbated by their limited academic skills. They are typically well below their peers in academic skills (Lane et al., 2006), and usually have lower GPA's than their classmates (Deshler et al., 2004). These challenges may increase feelings of incompetence, influence peer interactions, or minimize feelings of autonomy. Students with LD also have more difficulty self-regulating and have lower levels of metacognition for academic tasks (Graham et al., 1993; Pintrich et al., 1994) than their same-grade peers. In a study involving spelling tasks (Klassen, 2007), Canadian adolescents with LD consistently overestimated their performance to a greater degree than the non-LD sample. Although the ease of the sample words may have led some students with LD to create overly optimistic predictions, they also gave post-dictions that were overestimates of their spelling abilities. Therefore, in addition to having lower academic self-efficacy, declining motivation and below-level academic skills, students with LD may also struggle with appropriate calibration of specific academic abilities, exemplified here in spelling skills.

Adolescents with LD, however, do not always have a lower *global* self-worth than their peers. Crabtree and Rutland (2001) suggest that because these students can be considered a stigmatized group, they may, like other groups, develop strategies to nurture positive self-evaluations. They may do this by decreasing the value of academic tasks, comparing themselves only with others like them (i.e., those with a disability), or attributing negative feedback to the disability or the group rather than taking it personally. In Crabtree and Rutland's study, students with and without LD did not differ in their global self-worth but did have differing values of scholastic tasks, with the non-LD group assigning those tasks significantly higher levels of importance. Using the Internal/External frame of reference model, Möller, Streblow, and Pohlmann (2009) found that students with LD, like their peers, had an improved self-concept in an academic domain after receiving a good grade. Overall, the literature suggests that adolescents with LD have lower self-efficacy for academic tasks, tend to overestimate their abilities as compared with their non-LD peers, and devalue scholastic tasks.

In conclusion, adolescence is a time in which motivation can fluctuate as a result of multiple contributing factors, some internal and others external, yet all inevitably encountered as students grow, develop, and change. Motivation, then, is potentially influenced not only by gender and age but also by race and/or cultural identify and learner status. Overall, there is limited research in this vein; the questions outlined below address this deficit.

Research Questions

To investigate the relationship among motivation and reading achievement and future course enrollment in African American adolescents with and without documented IEP reading goals, this study will address the following research questions and hypotheses:

1. What is the factor structure of major constructs in expectancy-value theory of motivation (ability beliefs, expectancies for success, and importance, intrinsic, and cost task values in reading/English) in African American adolescents?

I hypothesize that perceived ability and expectancies for success will collapse into one factor, but that the other motivation constructs will remain unique in the analysis (Greene et al., 1999). Cost will remain unique because it concerns time and effort (Baker & Wigfield, 2003; Eccles & Wigfield, nd), whereas the other motivation constructs do not address either of these. Intrinsic value has consistently been a unique factor (Crombie et al., 2005; DeBacker & Nelson, 1999), and importance value has also been shown to combine utility and attainment as a unique factor (DeBacker & Nelson; Durik et al., 2006). The indicator variables will load onto the motivation factors in the same patterns as they have for European American adolescents, as suggested by Graham (1994).

2. What is the relationship between perceived reading/English ability, expectancies for success, cost, intrinsic, and importance task values for reading/English, and performance on a reading assessment for a sample of African American adolescents? Does the presence of an IEP with a reading goal add to the relationship?

I hypothesize that perceived ability and expectancies for success, as a combined latent factor, will be positively and significantly related to scores on the reading

assessment (Winston et al., 1997), as will cost and importance value factors (Berndt & Miller, 1990; DeBacker & Nelson, 1999). Intrinsic value will not be significant (Crombie et al., 2005). The indicator variables of SES, gender, and prior achievement will not be significant for this sample. Although gender has been shown to be significant for enrollment intentions, the same is not true for academic achievement, especially when considering motivation as well (Greene et al., 1999). Also, it is suggested that African American students have lower GPA's and higher expectancies for success and perceived abilities than their European American peers (Graham, 1994), and therefore this disconnect between prior achievement (English GPA) and actual performance will minimize its predictive value on a reading assessment for this sample of students. I believe that the protective factors cited by Graham may not be relevant for adolescents in schools with a majority of self-identified Black/African American students. Lastly, I predict that SES will not be significant because of limited variance in the sample. When the IEP reading goal variable is added, I hypothesize that the expectancies for success/perceived ability latent factor will continue to be positively and significantly related to scores on the reading assessment, as will cost and importance value latent factors. The intrinsic value factor will not be significant. The indicator variables of SES, gender, race, and prior achievement will not be significant for this sample. The new factor, the presence of a reading goal in a student's IEP, will not be significant, but will change the values of the paths between the motivation factors and the reading achievement variable. Although there are no studies that used IEP reading goal status in their analysis of expectancy-value constructs, Sideridis (2006) found that students with learning disabilities had both lower motivation and academic achievement than their

peers; therefore the addition of the variable will be redundant. Additionally, because these students often overestimate their abilities, the values of the pathways from perceived ability variable and expectancies for success to academic achievement will decrease or become non- significant.

3. What is the relationship between perceived reading/English ability, expectancy-value motivation constructs (listed above) and future course enrollment for African American adolescents? Does the presence of an IEP with a reading goal add to the relationship?

I hypothesize that the expectancies for success/perceived ability latent factor and the intrinsic value latent factor will be positively and significantly related to scores on enrollment intentions. Neither the cost value factor, importance value factor, nor the presence of a reading goal will be significant (Watt, 2006). Gender has repeatedly been shown to influence future course enrollment for European American students, (Crombie et al., 2005; Durik et al., 2006; Jodl et al. 2001; Nagy et al., 2006), and I believe this will hold true for African American students as well. Neither SES nor prior achievement will be a significant factor, the former for reasons outlined in research question two, and the latter in reflection of findings from Durik et al., who found that prior English achievement did not influence enrollment outcomes.

Implications

African American students with and without LD are part of the growingly diverse student population struggling to meet with success in academic domains. Assessment participation is expected for all students, and the consequences of poor performance on mandated exams can be long lasting. In this testing environment, it is important to better

understand the relationship between motivation and academic achievement and future course enrollment for students who have historically failed to achieve with their peers. Understanding motivation for these academic assessments may provide a deeper understanding of factors related to the achievement and aspirations of this group of at-risk students.

Definitions of Key Terms

Academic achievement- Student academic attainment is the dependent variable in this study and is based on performance on a norm referenced, standardized test of reading ability, the Test of Silent Reading Efficiency and Comprehension (TOSREC; Wagner, Torgesen, Rashotte, & Pearson, 2010).

Achievement-engagement paradox- the concept detailing the disparity between actual African American students' achievement and reports of high self-perceptions of achievement, engagement, or attitudes toward education (Shernoff & Schmidt, 2008).

Adolescent – The developmental period consisting of changes in biology, social relations, and cognitive functions, as well as increased opportunities to experience decision-making and its resulting outcomes. (Wigfield & Wagner, 2005). In this study adolescents are categorized as students in 5^{th} through 12^{th} grade, or approximately ages 11-18. It does not include or imply students in college settings.

Attainment value – "The value of an activity has because engaging in it is consistent with one's self image." (Eccles, 2005a, p. 109). One of four task values outlined in the Eccles et al. (1983) model. Attainment value is a part of importance value in this study.

Competence - the condition or quality of effectiveness, ability, sufficiency, or

success. (Elliot & Dweck, 2005, p. 5)

Cost value- "What an individual has to give up to do a task as well as the anticipated effort one will need to put into task completion." (Eccles, 2005a, p. 113). One of four task values outlined in the Eccles et al. (1983) model. Cost value is an independent variable measured by three items in the Motivation Survey the participants will complete.

Course enrollment intentions- See *Future course enrollment*

Documented reading goals- Learning disabilities will be operazationalized in this study through the use of documented reading goals on IEP's as reported by teachers and/or special educators in the participating high schools.

Drop out - The failure to complete a high school education and receive a standard or non-standard diploma.

Expectancy of success - "People's judgments about the likelihood of success at a task." (Schunk & Pajares, 2005, p. 90). Expectancy of success is an independent variable measured by four items in the Motivation Survey the participants will complete.

Expectancy value theory- "Educational, vocational, and other achievement-related choices are most directly-related to two sets of beliefs: the individual's expectations for success, and the importance or value the individual attaches to the various options perceived by the individual as available." This model also specifies "the relation of these beliefs to cultural norms, experiences, aptitudes, and to those personal beliefs and attitudes that are commonly assumed to be associated with achievement-related activities." (Eccles, 2005a, p. 105)

Extrinsic motivation- Doing something because it leads to a separable outcome

(Ryan & Deci, 2000). This is often directly contrasted with intrinsic motivation.

Five-Year Adjusted Cohort Graduation Rate - The five-year adjusted cohort graduation rate is the number of students who graduate in five years with a regular high school diploma divided by the number of students who form the adjusted cohort for the graduating class. From the beginning of 9th grade, students who are entering that grade for the first time form a cohort that is subsequently "adjusted" by adding any students who transfer into the cohort later during the 9th grade and the next four years and subtracting any students who transfer out, emigrate to another country, or die during that same period. This definition is defined in federal regulation 34 C.F.R. §200.19(b)(1)(i)-(iv). The five year adjusted cohort graduation rate strictly adheres to section 1111(b)(2)(C)(vi) of the Elementary and Secondary Education Act, which defines graduation rate as the "percentage of students who graduate from secondary school with a *regular diploma* in the standard number of years." The five year graduation rate is calculated by dividing the number of students who graduate in five years or less with a regular high school diploma by the number of students who form the adjusted cohort for that graduating class. Students who drop out of high school remain in the adjusted cohort—that is, the denominator of the graduation rate calculation. (Website blinded for confidentiality).

Future course enrollment – In this study, students were asked in a Likert scale to evaluate how likely they were to take classes which required lots of reading or skills acquired in English class.

Gender- In this study, students will be coded either Female or Male; gender is a control variable.

Importance value -The construct combining attainment and utility values. It has been empirically supported in previous research. Importance value is an independent variable measured by four items in the Motivation Survey the participants will complete.

Interest value -see *Intrinsic value.*

Intrinsic motivation- Doing something because it is inherently interesting (Ryan & Deci, 2000). This is often directly contrasted with extrinsic motivation.

Intrinsic value. "Expected enjoyment of engaging in a task." (Eccles, 2005a, p. 109). Intrinsic value is an independent variable measured by three items in the Motivation Survey the participants will complete.

Learning disability (LD) – "(A) IN GENERAL - The term 'specific learning disability' means a disorder in 1 or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations." (IDEA Amendments of 2004, Sec 602(30), p. 118) This term also includes perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include learning problems caused by visual, hearing, or motor impairment, mental retardation, emotional disturbance, or environmental, cultural, or economic disadvantage. In this study, only students with a reading goal on their IEP will be coded; see *Documented reading goal* for additional clarification of this term as used in this study.

Leaver graduation rate- the percentage of students who received a (blinded for confidentiality) high school diploma during the reported school year. This is an estimated cohort rate. It is calculated by dividing the number of high school graduates by the sum

of the dropouts for grades 9 through 12, respectively, in consecutive years, plus the number of high school graduates. (Website blinded for confidentiality)

Motivation – Interest, desire, and commitment to a task (Guthrie, 2008).

Non-standard diploma- documentation received at the end of high school indicating that the student has not completed and/or received credit for required coursework, possibly including standardized tests, upon graduation from secondary education. Non-standard diplomas and certificates may validate student attendance, be provided to students who are unable to meet testing standards, or be given to students with special education needs who could not complete the required coursework and assessments.

Oppositional identity theory- A perspective which suggests that black students are alienated from schools because of their social status and therefore underachieve purposely to avoid sanctioning by their classmates. Minorities reject the majority culture values because they perceive fewer rewards, opportunities, and benefits as well as increased negative social stigma as a result of pursuing academic success (Ogbu, 1978).

Perceived ability- "Beliefs about ability refer to children's evaluations of their competence in different areas," (Wigfield & Eccles, 91). Perceived ability is an independent variable measured by four items in the Motivation Survey the participants will complete.

Prior achievement- In this study, prior achievement is operazationalized as the self-reported grade point average (GPA) for each participant for the previous academic year's English or Language Arts class. It is a control variable.

Self-concept- "One's collective self-perceptions formed through experiences with

and interpretations of the environment, and heavily influenced by reinforcements and evaluations by significant other persons (Shavelson & Bolus, 1982, in Schunk & Pajares, 2005, p. 88)

Socio-economic status (SES)- In this study, SES is measured by parent report in the demographic survey. Parents were asked to report their income as well as the number of people in their household. These data are used to compute a dichotomous variable indicating a family's status as at or below the poverty level. SES is a control variable in this study.

Stereotype threat – Negative stereotypes about a group to which a student belongs can threaten the student and diminish motivational beliefs (Aronson, Quinn, & Spencer, 1998).

Task value - "The quality of the task that contributes to the increasing or decreasing probability that an individual will select it" (Eccles, 2005a, p. 109). There are four task values outlined in the Eccles et al. (1983) model; in this study, two task values (attainment and utility) will be combined to create importance value (see definitions).

Utility value - "The value that a task has for facilitating one's long-range goals or helping the individual obtain immediate or long-range external rewards" (Eccles, 2005a, p. 109). One of four task values outlined in the Eccles et al. (1983) model. Utility value is a part of importance value in this study.

Chapter 2

REVIEW OF THE LITERATURE

The purpose of this chapter is to summarize the findings of studies exploring the relationships between expectancy-value motivation and achievement for African American adolescents with and without learning disabilities. This chapter begins with a focus on the framework and constructs of expectancy-value motivation, followed by an explanation of trends in motivation before and during adolescence. This is followed by a summary of studies of adolescent motivation that did not meet the search criteria but are essential to a thorough understanding of these constructs and populations. Next, there are content and methodological reviews of studies in one of three groups: those with a majority of African American participants, those with students with LD, and those with expectancy-value motivation constructs as the independent variables in which academic achievement is the dependent variable. Finally, the research questions that guided this study are listed.

Expectancy-Value Theory

To understand the foundation, tenets, and model of expectancy-value motivation and its interconnected components, a thorough review of the theory, with attention to constructs that overlap with other theories, is warranted. As Figure 1 outlines, gender, family demographics (SES), and prior achievement are part of the lens through which students filter the value of a task, their perceived ability to complete the task, and their expectancies for success and enrollment intentions. These are the major components of expectancy value theory on which this review will focus. To provide a more global perspective, Figure 2 presents a visual representation of the six major theories of

academic motivation: goal-orientation, attribution, self-determination, self-efficacy, social theory, and expectancy-value.

Expectancy value theory has a long history beginning with the work of Atkinson (1964), who developed the first model as a means of explaining achievement-related behaviors. He theorized that achievement is influenced by achievement motives, expectancies for success, and the value a task holds or brings; the latter two were more tied to a specific task, while the former was considered fairly stable (see Wigfield, Tonks, & Klauda, 2009). Achievement motivation, which is "relevant to performance on tasks in which standards of excellence are operative," (p. 933, Wigfield et al., 2006) is influenced most directly by expectancies for success and task values, but these beliefs are influenced by many other factors. Research conducted over the past 30 years suggests that performance on an achievement task is influenced by persistence, choices and expectancies for success, and that these constructs are nested within family, school, classrooms, peer, and other social group contexts. An individual's perception of ability changes as he ages and gender, prior achievement, and psychological and cultural factors also play a role in framing these constructs and therefore achievement behaviors.

Expectancies for success and task values are based in part on the levels of confidence students have in their abilities (perceived ability) to accomplish a task ("Can I do this task?"). After establishing that, students ask, "Do I want to do this task?" and finally, "Why?" (Wigfield, et al., 2006). The first question centers on an individual's evaluation of competence or perceived ability to complete a task. This impacts expectancies for success; if an individual is not sure that he can complete a task, it follows that he would not have a high expectancy for success on it. The expectancy-value

theory is often compared here with the self-efficacy model because of its recognition of the importance of students' evaluation of their own strengths and weaknesses. However, an important distinction is that an individual uses not only his proficiency at one particular skill or ability to determine his potential for success, but also considers the value of task, and adding other external and internal rewards and outcomes to that analysis. Bandura (1997) suggests that there are two kinds of expectancies. Outcome expectations are those which are weighed in light of practice or persistence; efficacy expectations are the individual's beliefs about whether or not he can even perform the task that is before him. In expectancy value theory, efficacy expectations most mirror expectancies for success (Wigfield, et al.). Bandura's self-efficacy measures did not include comparisons with others (classmates, peers), but ability beliefs in the expectancy value model can and often do include performance evaluations relative to others.

Expectancies for Success and Perceived Ability

Expectancies for success are an individual's beliefs about how he will perform in the future and concern a specific task (Wigfield et al., 2006). Perceived ability is defined as an individual's evaluations of his current ability in a domain. For the Eccles model, this construct includes comparisons with others. These constructs often loads onto the same factors. Perceived ability and expectancies for success are theoretically distinct although highly correlated empirically (Eccles & Wigfield 1995, 2000; Wigfield et al. 2006). Expectancies for success have repeatedly been shown to predict performance e.g., GPA or course grades (Berndt & Miller, 1990). Distinctions between the two are framed by time and domain. Perceived ability can be a more tied to a domain (math, English, sports) and questionnaire items are often phrased in the present tense. In repeated studies,

these two concepts have loaded onto the same factor (Durik et al., 2006; Simpkins et al., 2006) and have shown to significantly correlate to or predict academic achievement. However, not enough studies of diverse populations such as ethnically, racially, or ability diverse students, have been completed to ensure that these two constructs would load on the same factor with a non-European American, general education sample. For instance, African American adolescents have been shown to have expectancies for success that do not always match their perceived abilities or measured academic skills (Graham, 1994) and students with LD have been shown to have significant miscalibrations of their domain- ability and unreasonable expectancies for success (Crabtree & Rutland, 2001). These factors warrant attention to the theoretical differences between the two constructs and attention to how these distinctions might manifest empirically with different student populations.

Subjective Task Values

An important and unique aspect of this theory is the individual's subjective task values (Wigfield, 1994) that address the question, "Do I want to do this task?" An individual may have the ability and expectation for success on a task but may choose not to pursue it; understanding task values helps to elucidate what other influences beyond ability and expectations that a person considers before engaging in a task. The individual weighs the *intrinsic, utility, attainment,* and *cost* value of a task as part of the motivation process.

A task may have an intrinsic value and thereby foster a deeper understanding of something an individual holds in high regard or enjoys doing (Wigfield, Tonks & Klauda, 2009). Intrinsic value should not be confused with *intrinsic motivation*, the origin of the

impetus to complete a task (Eccles, 2005a). A task can certainly be intrinsically motivating and completing the task may have intrinsic value, but the two can exist orthogonally as well.

A task with high utility value, once learned, can be used to gain acceptance into another placement; a third year language course may lead to an honors high school diploma, which then results in acceptance to more competitive college. This task value places the most weight on current and future goals and can be conceptualized as both intrinsic and extrinsic (Wigfield, Tonks & Klauda, 2009; Wigfield et al., 2006).

Attainment value is the importance of the activity to the student and the value the student places on doing well on that task. When an individual pursues a task for attainment value, there is often a connection between the task and gender roles or ethnic identity (Shernoff, & Schmidt 2008; Wigfield, et al., 2006). The difference between the attainment and utility might best be explained through the focus of the task. If a task has utility value, it can be manipulated or used to gain another level or tangible step toward a larger or more challenging goal (Eccles, 2005a). Attainment value is tied to the individual's sense of self; an increased self worth or competence, not necessarily a tangible result, is often the result of completing the task. Attainment and utility values often overlap, and are sometimes combined in factor analyses. *Importance value* is the combination attainment and utility value that will be used in this study. African American students and students with LD have been shown to have differences in their motivation from their peers tied to their identity as well as to their valuing of the utility of school (Ogbu, 1978). Therefore, for these populations, combining the two factors is appropriate; other studies have done this as well and found survey items to load onto the same factors

(Durik et al., 2006).

Cost value evaluates what is gained versus lost by choosing to attend to a task (Eccles, 2005a) and is negatively correlated to the other task values. Specifically, an individual could miss a weekend sports event for a resulting increase in GPA from studying for those hours. Conversely, another individual may choose to attend a movie with friends instead of completing a class project. Costs can be emotional as well, such as an increase in anxiety or required effort to perform a task proficiently; these may be weighed as fully as more tangible considerations (Wigfield et al., 2006).

Expectancy-value theory posits that motivation can be intrinsic or extrinsic, based on short or long term goals, or originate from a sense of competence derived from success on prior tasks (Eccles, 2005b). Ultimately, a combination of expectancies for success, perceived ability, and the four subjective values determines the choices students make regarding a task, how much persistence or effort they exhibit to complete it, and the level of performance or proficiency they attain once they have finished the task. Adolescents are able to explore and apply the task value aspect of expectancy-value theory to a greater extent than younger students because they have ample prior experiences, can conceptualize future plans and intentions, are able to weigh costs, can reflect cognitively on their own thought processes, and understand how to use one task to further their development toward another (Wigfield & Wagner, 2005). These processes influence their academic achievement and the choices they make. This theory, then, can be used to explore many facets of adolescent motivation because it can provide a deeper understanding of emotions and expectancy of success as well as processes (weighing subjective task values) that prompt a student to complete a task.

Validity of Expectancy-Value Constructs

Relationships between and among the constructs in the expectancy-value model have been established. Perceived ability and expectations for success are highly positively correlated, as an individual would expect to do well on a task for which he believes to have ability. A student's intrinsic value should also be strongly related to perceived ability, because the more competent an individual feels about completing a task, the more likely it is that the student will want to do it (Eccles & Wigfield, 1995). The four task values should be correlated, although utility value should be less strongly linked to intrinsic value, as the former depends more on external rewards and the latter on the feelings of personal satisfaction or contentedness that come from doing or completing the task. However, although task values, expectancies for success, and perceived ability are related, they are unique constructs and are clearly distinguished from one another; the same holds true for each of the four task values. A student may expect to be successful on a task, and believe that s/he holds the skills that can reinforce that expectancy, but these are not the same; expectation of success is not the same as a capacity for success. Similarly, expecting to do well on a task may be linked to but is not the same as enjoying it (intrinsic value), assuming that it will lead to better things (utility value), completing it for confirmation of self (attainment value), or deciding its time and emotional worth (cost value). Empirically, factor path analyses have supported that these constructs are distinctive and study results have shown that each construct uniquely contributes to academic achievement outcomes and future course enrollment.

Researchers have explored the relationships within and between the constructs of the expectancy-value model. Bong (2001) addressed the degree of between-domain

associations of task value (utility, intrinsic attainment), self-efficacy, and achievement goal orientations, the nature of within-domain motivation constructs, and the stability of interrelations across academic areas. The author concluded that task value motivation is subject (domain) specific, and that within those content areas, task value, mastery-approach achievement goals, and self efficacy are significantly correlated ($p < .05$). This reinforces the theoretical expectation that a high self-efficacy would correlate with a high task value in a specific domain. The analyses also revealed significant correlations between the importance, intrinsic value, and usefulness of a task with mastery goal orientation.

In a study of expectancies for success, task values, and perceived task difficulty, Eccles and Wigfield (1995) used exploratory and confirmatory factor analysis to analyze 29 items about the math domain in the *Self and Task-Perception Questionnaire* administered to 5^{th} through 12^{th} grade adolescents. The authors determined that each variable was readily discernable from the others and that the three task values they included (intrinsic, attainment, utility) are also unique. They also found that perceptions of ability (placed under the umbrella of expectancies for success) correlated strongly with attainment and intrinsic value and less so with utility value. The correlations between competence and subjective task values ($r \geq .43$) found by Jacobs et al. (2002) support these findings. Of concern is that self-perceptions and expectancies for success were grouped together in the Eccles and Wigfield study; this is a common combination in the research (see content and methodological reviews), but as Eccles (2005) clarifies, "expectations for success…depend on the confidence the individual has in his or her…abilities and on the individual's estimations of the difficulty of the course" (p 106).

This constructs are distinguished in theory, but are so strongly correlated that they are often combined empirically. Therefore, expectancy of success may involve the perception of *task* difficulty, whereas self-concept/perceived ability is the perception in one's *own* skills. These studies establish relationships among and unique features of the constructs of expectancy-value motivation and provide a foundation for the review of the impact of perceived ability, subjective task values, and expectancies for success on adolescent academic achievement.

Changes in Expectancy Value Motivation

In a longitudinal study focused on 7th through 11th grade Australian students, Watt (2008) found that English and math related talent perceptions and intrinsic values declined throughout adolescence. Gender differences in that study were consistent with stereotypes, i.e., boys had a lesser decline in math abilities and girls had a lesser decline in English. These findings are in contrast to the results of a two year study of cohorts of Canadian 7th and 9th graders concerning math utility value, goal orientation, and competence beliefs (Chouinard & Roy, 2008). In that study, researchers found that although overall motivation decreased throughout the school year, girls' competence beliefs slightly increased in math domain. This study also found that mastery-approach goals were lower and performance-avoidance goals were higher at the end of the school year and declined as the participants aged.

A similar pattern of decline was found in a longitudinal study that included English and sports. Using the Childhood and Beyond data compiled from three cohorts of primarily European American students from 10 public elementary schools between 1989-1999, Jacobs et al. (2002) described changes in self-competency beliefs and values over

an 11 year period and examined the impact of changes in competence beliefs on changes in task values. As expected, students' competency beliefs and subjective task values had a significant negative change from grade 2 to grade 12. Boys and girls held different task values for language arts and sports, but there were no gender differences in the intercept in the domain of math and no significant gender differences were found in the rate of change in either language arts or math for task values. Perceptions of ability (competence) accounted for over 40% of the decrease across all domains and ages in subjective task values and explained between 38% and 71% of the variance in stable individual differences in subjective task values. In other words, student perceptions of their skills as compared with those of their peers accounted for a large percentage of the value they placed on those tasks. This study also supports the assumption of the decline of academic motivation throughout adolescence.

Overall, these cross sectional and longitudinal studies converge on the interpretation that adolescence is a time of increased comparison with others, redefining the self, and analyzing the choices and values of academic tasks. Prior research indicates that academic motivation is domain specific, and that students become more motivated to avoid embarrassment or recognition than by intrinsic values as they become older. Adolescent motivation requires further inquiry and analysis using measurement that is sensitive to the changes in motivation that occur during junior and high school. The lens of the expectancy-value theory of motivation provides a framework through which to do so. As illustrated through the explanation of the constructs, the entwined yet distinct elements of the theory establish a network of relationships between family and personal characteristics such as gender, race, and SES, and academic experience (prior

achievement) and the resulting perceived abilities. These abilities and experiences feed expectancies for success and the task values that translate into academic achievement and choices (Figure 1). Of particular interest to this review is the intersection of these construct for African American adolescents with and without learning disabilities.

Expectancy Value and Academic Achievement in Diverse Populations

African American Students

Little research has focused on how African American students' expectancies and values relate to their resulting academic outcomes. Graham (1994) suggested that there is no conclusive support for the assumptions that African American students would have lower self-efficacy or expectancies for success than their European American peers and cites multiple studies that have found the opposite. Graham also summarized findings related to self-perceived academic ability and found that in only 2 of 18 studies that European American students had higher levels than the Black/African American students. However, other studies since that review have hinted that the engagement-achievement paradox (Mickelson, 1990; Shernoff & Schmidt 2008), oppositional identity (Ogbu, 1978), and stereotype threat (Eccles et al., 2006; Irving & Hudley, 2005; Long et al., 2007) create differences between the motivation patterns of African American and European American students. Although the unique relationships between expectancies/task values and academic achievement outcomes and/or future course enrollment, as framed and defined in the expectancy-value model, has rarely been explored with African American adolescents, (Table 3 provides study details), a number of studies have used other theories, most popularly social theory (peer, parent, teacher, school influences) and ethnic identity to attempt to explain some of the paradoxes

observed in African American populations (see Chapter 1).

In the process of locating studies that fit the parameters outlined in the search criteria for inclusion in the content and methodological reviews in this chapter, a sub-group of studies that did not fit the criteria was identified. A cursory summary of these findings provides additional context for the study of African American adolescents and motivation and further support of the need for additional research about the role of expectancy-value motivation with this population. Some of these studies were briefly addressed in Chapter 1. A summary is provided in Table 1.

Five studies (Kerpelman et al., 2002; Osterman, 2000; Richardson & Eccles, 2007; Schmakel, 2008; Wiggan, 2007) were qualitative and therefore not included in the reviews. Through personal correspondence (Wigfield, 2010), two poster sessions (Chen et al., 2008; Malanchuk, 2008) and a paper (Garrett, Malanchuk, & Eccles, 2008) were identified. The posters provided information about the roles of parents, peers, engagement, leisurely reading, and school involvement in spurring and sustaining the academic achievement and motivation of African American students, but by design, lacked clear independent and dependent variables; the paper had the same unclear relationships among the variables. However as both the posters and paper lacked peer review, were not permissible additions. The analysis of the perception of barriers to success was another common independent variable (Harris, 2006; Harris, 2008; Taylor & Graham, 2007). These three studies, in addition to the work of Mikelson (1990) sought to explore the relationships between perceived barriers, academic outcomes, and the achievement-engagement and oppositional-identity theories cited in Chapter 1, and provide researchers with support for new ways to conceptualize these frameworks.

However, in these studies, the independent variable (barriers) was not operazationalized through the lens of motivation.

Table 1. Summary of Studies: African American participants and motivation constructs.

Study	Purpose	Participants	Results
		Qualitative Studies	
Kerpelman, Shoffner, & Ross- Griffin (2002)	Explore the perceptions that mother and daughters had of the daughters' expected possible selves and their strategies for promoting the daughter's movement toward attaining desired academic and career goals; examine how variations in the mother-daughter pairs prioritizing of expected possible selves in the areas of personal attributes, roles, and life circumstances was related to mothers' and daughters' strategies for helping their daughter realize her future academic and career goals.	22 African American mother-daughter pairs; 14 adolescents were 14 entering the 9th grade; 8 adolescents were 11th graders (6 were 16 and 2 were 17).	The main themes across participants for the daughters' possible selves were being a college graduate, a career woman, a responsible person who was emotionally and financially independent, and someone who was socially connected and morally upstanding; mothers without a college education offered fewer strategies than mothers with college experience. Group 1 pairs expected their daughters to be more organized, creative, helpful, intelligent, a good student, and a mother. Group 2 pairs expected religious, rich, and famous in careers such as business owner, religious leader or lawyer. The mothers of Group 1 daughter viewed their them as motivated and highly competitive; the mothers of Group 2 daughters say them as lazy, unfocused, and in need of external guidance and motivation.
Richardson & Eccles (2007	Argue that voluntary reading by adolescents provides learning opportunities that scaffold identity formation, effort spaces where youth rehearse and relationally enact gender roles, ethnic/racial/ identification, and fashion educational aspirations.	6 case studies pulled from 35 qualitative interviews of students in the Maryland Adolescent development in Content Study (MADICS)	The amount of voluntary reading in which individuals engage is affected by other pressures stemming from school, family, social and work commitments, all of which become increasingly insistent and invasive as adolescents progress into their senior years of high

			school and beyond. Reading that individuals undertake can serve as a means of escape from daily realities, pleasantly filling time, and an avenue for gathering information.
Schmakel (2008)	Describe and explain the perspectives, beliefs, and recommendations of seventh grade students on instructional practices and environments that affected their academic motivation, engagement, and achievement.	67 7th grade students (African American, Hispanic-non White, White, Multiracial)	Confirms early adolescents as creative, imaginative, at a turning point between childhood and adult development and open for positive developmental influences from adults who serve them. Most of the participating students, both low and high achievers, did care about academics and academic achievement.
Wiggan (2007)	Explore the experiences of African American students; understand the processes that contribute to the students' school success; explain the progress students believe is necessary to improve achievement across the nation.	6 African American adolescents (2 freshmen, 4 sophomores)	Student suggestions included: improving pedagogy, school finance reform, enhancing extracurricular activities in schools, and a nationwide scholarship to help students from low income families pursue high education.
		Posters and Papers	
Chen, Malanchuk, Messersmith, & Eccles (2008)	Examine the impact of one's GPA on the subsequent levels of occupational aspirations for both gender and race using latent trajectory models.	Data from the MADICS study: 8th grade year (age 15), 11th grade (age 17), 1 year after graduation (age 19) and 3 years after graduation (age 21); African American and European American participants	Occupational aspirations decline in prestige level during later adolescence for all participants, indicating the intrusion of more realistic attitudes toward career aspirations for many young people. Girls start out with relatively higher grades and occupational aspirations than boys and their dreams diminish at a faster rate. African American girls have the highest career aspirations and cling to them the most, African American boys the lowest

			grades, steepest decline in grades, and least decline in aspirations.
Garrett, Malanchuk, & Eccles (2008)	Examine school support, parent support, and peer support as predictors of change in college expectations from middle to high school controlling for prior grades, ethnicity, gender, and family income; examine expectations of going to college as a predictor of educational attainment; explore the indirect relationship between support and academic attainment; examine if perceptions of discrimination towards member of their race downwardly adjust students' academic expectations.	Data from MADICS collected at 8th grade, 11th grade, 1 year after graduation, and 3 years after graduation. 61% African American, 35% European American, and 50% female.	A variety of supportive contexts seem to have an additive effect in supporting college plans and attainment. College plans are important for actual academic attainment. For college plans and attendance, parent advice, and peer advice are more strongly related to academic expectations than school advice. The perception of discrimination was an additional influence in the model for White students (who were the minority in the schools in this study).
Malanchuk, Messersmith, & Eccles (2008)	Examine the impact of early academic achievement (GPA) and later occupational aspirations on subsequent academic, psychological, and behavioral outcomes one year after high school.	Data from MADICS collected at 8th grade, 11th grade, and 1 year after graduation; 322 Black and 137 White participants	The combination of high occupational aspirations and grades in early adolescence (8th grade) results in generally positive outcomes in all three domains; the results are moderated by the youth's occupational aspirations.
		Ethnic Identity/Unique Challenges	
Gordon Rouse & Austin (2002)	Examines within-ethnic-group differences in motivation by level of academic achievement as measured by GPA and gender.	245 African American (88 females and 57 males), 78 in low achievement group and 67 in high achievement group. 78 Hispanic (46	The cognitive domain did significantly differentiate between GPA achievement levels in all ethnic groups; the social domain distinguished between GPA achievement levels in the European

		female, 32 male), 50 in the low-achievement group and 28 in the high-achievement group; 145 European American (69 female and 76 were male) 47 in low achievement group and 98 in the high achievement group	American and African American ethnic groups; Hispanic and European American males had higher levels of motivation than same group females; high-GPA students had more cognitive motivation than low-GPA students.
McNair & Johnson (2009)	Examine the combined roles of school characteristics, parental views of achievement, parental involvement, and academic resources at home in predicting adolescent attitudes towards school importance and academic performance examine contextual associations with adolescent school attitudes and academic performance.	Data from MADICS collected at 7th and 8th grade; 67% of adult sample was African American, 33% was European American; student sample in 7th grade consisted of 323 males (*M* = 12.27 years, *SD* = .54 years), and 314 females (*M* = 12.24 years, *SD* = .51 years)	Time parents spent with their child and positive perceptions of the school environment were positively associated with adolescent Grade 7 reports of school importance, and adolescent Grade 7 school attitude reports and Grade 7 GPA were positively associated with Grade 8 GPA.
Shernoff & Schmidt (2007)	Investigate if there are racial/ethnic differences in academic achievement/the relationship between achievement and engagement, racial/ethnic differences in engagement and quality of experience, if there are effects of on-task behavior on students' engagement and quality of experience, and if they differ by race/ethnicity, and if there are effects of being in home, public, and school contexts on students' engagement and quality of experience, and if they differ by race/ethnicity when controlling for SES	586 10th (*n* = 267) and 12th (*n*= 319) grade adolescents in three cohorts; *n*= 352 female; 65% white (*n* = 381), 16% black (*n* = 50), 9% Asian (*n* = 50), 10% Latino (*n* = 59).	The relationship between engagement and achievement might be moderated by race and ethnicity.

	and other background characteristics.		
Yasui, Dorham, & Dishion (2004)	Examine if ethnic identity will be associated with mental health outcomes in adolescents, with social adaption, defined by parent report, self-report, and a comprehensive school-based approach, and if the associations will be stronger for African American adolescents.	159 adolescents (48% European American, *N* = 77; 52% African American, *N* = 82).	Ethnic identity was a significant predictor of adolescent adjustment in both areas of social adaptations and emotional adjustment for both groups of adolescents; both groups reported comparable levels of ethnic identity, indicating that they are in the same stage of ethnic identity development; African American adolescents' positive adjustment was more consistently predicted by higher levels of ethnic identity, a prediction less consistent among European American adolescents. Lower levels of ethnic identity were found to predict more difficult adjustment.
	Social Theory/ Social Supports		
Fenzel, Magaletta, &Peyrot (1997)	Examine the relationships between three sources of strain (peer relations, teacher relations, and academic demands) and measures of school functioning (intrinsic motivation for school work, perceived scholastic competence, and school performance) and self-worth were examined at the beginning and end of the school year.	102 average track African American students, 41 males and 61 females in grades 6-8	Students exhibited the effects of being burdened by the time demands of school work and demands to perform well in school by the negative relationships found between schools demands strain and self-esteem at Time 1 and school functioning measures of intrinsic motivation and scholastic competence at Time 2. Significant relations between train associated with teacher relations, school demands, and peer relations and students' self-reported GPA were not found.

Friedel, Cortina, Turner, & Midgley (2010)	Examines students' perceptions of the socio-cultural contexts in which they engage in learning mathematics, including the extent to which children perceive an emphasis on learning and understanding (mastery goals) and relative ability (performance goals)	*N* = 929 students over four waves in 6th to 7th grade; 53% female, White (65%), African American (27%)	Decline in self-efficacy beliefs was most pronounced for students who perceived a lower emphasis on mastery goals in their middle school classroom compared with their experience during elementary school. Students who perceived in increase in master goal emphasis showed an increase in self-efficacy beliefs. These effects of perceived change in the goals teachers emphasized were independent of the effects of students' perception of their parents' goal emphases.
Goodenow & Grady (1993)	Investigated the hypothesis that students' sense of belonging in school would be significantly associated with measures of school motivation, expectations of academic success, valuing of academic work, and persistence in difficult tasks.	1987th -9th graders (104 boys, 87 girls); 89 self-defined as African American or Black, 66 as White, 2 as Asian, and 9 had no response	Many urban adolescents may have a poor sense of school belonging and low school motivation; students who do have a high sense of belonging in school are also more likely to be motivated and academically engaged than those whose sense of belonging is low; there are both ethnic and gender differences in this pattern of relationships.
Irving & Hudley (2005)	Measure the relationship between cultural mistrust, academic achievement, values, and academic outcome expectations among a sample of African American high school students.	75 African American high school male students (*M* = 15.5)	Cultural mistrust was negatively related to both outcome expectations and outcome value; cultural mistrust and outcome value both uniquely predicted education outcome expectations.
Kerpelman, Eryigit, & Stephens (2008)	Examine associates among African American adolescents' future education orientation, self-efficacy, ethnic identity, gender, and perceptions of parental	*N* = 374 (152 males, 222 females) aged 12-20 (*M* = 15.3, *SD* = 1.71)	Self-efficacy, ethnic identity, and perceived maternal support for achievement were found to influence future education orientation. Males and

	support for achievement.		females differ in the prediction of future education orientation based on their self-efficacy, ethnic identity or perceived maternal support, although the majority of female adolescents had higher future education orientation than the males did.
		Barriers	
Harris (2006)	Determine if oppositional culture theory exists among involuntary minorities relative to whites.	Data from MADICS collected at 7th,8th, and 11th grades; 100% African American; student sample in 7th grade (*n* = 1407) 8th grade (*n* = 1004) and 11th grade (*n* = 954).	Major tenets of the oppositional culture theory were not supported in the analyses; maturation after 7th grade had minimal impact on group differences in outcomes.
Harris (2008)	To examine if blacks perceive lower value from schooling than whites, greater barriers despite schooling than do whites, beliefs about the value of school are positively associated with school performance and the odds of enrolling in college, and students' beliefs about future barriers they might encounter despite their level of education are negatively associated with academic outcomes.	Data from MADICS collected at 7th (*N* = 1407), 11t (*N* = 954), one year post-graduation (*N* = 832), and three years post-graduation grades (*N* = 853).	Perceived value of schooling leads whites to pursue further schooling, whereas blacks' liking of enrolling in college immediately following high school; With regard to achievement, beliefs about the value of schooling have the same effect for both groups.
Mickelson (1990)	Examine abstract and concrete attitudes toward education and how these vary by race and class and how they explain variance in achievement among students.	1,193 high school seniors (51% female, 59% white, 41 % black).	Both abstract and concrete attitudes toward education are held by all students; concrete and abstract attitudes vary by race; concrete but not abstract attitudes vary by class; concrete attitudes explain achievement better than abstract attitudes; concrete and abstract attitudes

			contribute significantly to the explained variance in achievement among all variables.
Taylor & Graham (2007)	Investigate gender and grade differences in ethnic minority students' achievement values and the relationship between values and perception of barriers to educational or occupational opportunities.	615 boys and girls: African American = 282 2nd grade, 90 4th graders, 107 7th graders; Latino = 110 2nd graders, 122 4th graders, 101 7th graders	Gender/grade interactions exist in students' endorsements of academic achievement variables; ratings of barriers increased across years

Another important subcategory of studies, those which explore ethnic identity, was also not included in the final review. This is also due in part to the lack of an identified motivation variable and partly to the choice of dependent variable. Of the three studies that evaluated the impact of ethnic identity on groups of African American, Latino, and/or Caucasian children, one used psychological adjustment (Yasui, Dorham, & Dishion, 2004) as the dependent variable, and the other two compared within and between group differences rather than the influence of those differences on an academic variable (Gordon Rouse & Austin, 2002; Shernoff & Schmidt, 2008).

The final category of studies that did not meet inclusion criteria, those that evaluate, via the social theory framework, the influence of peers, parents, school characteristics, and teachers, was comprised of six studies. In each of these studies, the social variables were independent variables but an academic achievement was not used as the outcome variable. Although these studies provide a framework for understanding the impact of social structures on African American adolescents' self-efficacy (Friedel, et al., 2010; Kerpelman, 2008), adjustment (Simpkins, Eccles, & Becnel, 2008), school strain (Fenzel, Magaletta, & Peyrot, 1997), and outcome expectations and values (Goodenow & Grady, 1993; Irving & Hudley, 2005), they do not provide information about how the social factors influence academic achievement, the main variable of interest in this study. Therefore, these studies were not included in the content and methodological reviews.

Table1 summarizes the important information for each of these studies. The studies contribute to a broader understanding of the motivation of African American adolescents, *and* provide support for the statement that there is *not* ample evidence about the relationship between motivation theories and academic outcomes for African

American students. This is an obvious area in need of future research.

Students with Learning Disabilities

Achievement motivation is often correlated to performance on school outcomes such as course grades, GPA, standardized test performance, class enrollment, or future career aspirations. Students with special education needs may be particularly at risk for poor performance in some of these outcomes, particularly testing situations, as compared with their peers (Carter et al., 2005) and therefore motivation for secondary school success is a logical and interesting area to search for opportunities to better understand the academic achievement and intentions of students with LD. These students often require increased opportunities to learn curriculum through repeated exposure and greater time on task, but in classrooms in which passing assessments is the only or most prominent outcome, less time is spent on content and strategy instruction and more on test-taking skills, test-specific questions, and repetitive formats that reflect those of the tests (e.g., Christenton, Decker, Triezenberg, et al., 2007). Adolescents with LD, as summarized in Chapter 1, have greater difficulty evaluating their abilities and judging a task's difficulty; they also tend to have fewer academic skills than their peers and value scholastic tasks less (Crabtree &Rutland, 2001; Klassen, 2007). Although researchers have established that there are differences between students with and without LD on multiple measures and outcomes, there has not been the needed attention to what variables might influence these disparities. Studies of adolescents using goal orientation and perceived competence as the variable of interest (Sideridis, 2005, 2006; Weist et al. 2001) have been conducted, but in general, there is a paucity of research that has explored the relationship between LD is and students' motivation to be successful on

academic assessments. Specifically, there are no studies that examine the relationships among students with LD, the constructs of expectancy-value motivation, and academic outcomes. This is an area in need of increased research, as understanding task values in addition to perceived ability and expectancies for success can provide insight into adolescent scholastic achievement.

One area of motivation that has received much attention for its relevance to students with LD is self-concept, alternatively labeled self-efficacy, self-perceptions, and self-regulation within various frameworks excluding that of expectancy-value theory. Eight studies that explored these motivation variables were excluded from this chapter's extensive content and methodological review for a variety of reasons. In four studies, the dependent variable was effort (Lackaye & Margalit, 2006), persistence (Baird, Sccott, Dedaring, & Hamill, 2009), goal orientation (Baird, et al.), or self-concept/self-perception (Crabtree & Rutland, 2001; Möller, et al., 2009) and not an academic achievement outcome or future course enrollment. Fulk, Brigham, and Lohman (1998) provided only correlations and comparisons among motivation constructs for students with and without learning and behavioral disabilities. These studies supported the findings that have been articulated in Chapter 1, namely that students with learning disabilities have low levels of general and academic self-concept, that they embrace more performance-oriented goals, have a more entity-based view of intelligence, and have less persistence and exert less effort when compared with their peers without learning disabilities. However, as purpose of the review is to establish what is known about the influence of motivation on academic achievement outcomes and future course enrollment for students with and without learning disabilities, these studies do not contribute directly to that category. In the

remaining studies, neither academic achievement nor future enrollment outcomes were a variable of interest, but the methodology used was correlation, not causation (Chapman, 1988; Klassen, 2006, 2010), and/or the purpose of the study was a comparison between LD and non-LD groups (Klassen, 2006, 2010) rather than the relationship among the variables themselves. Table 2 summarizes the studies of self-concept/self-efficacy/self-perception with students with LD. It should be noted that none of the studies listed above included African Americans with or without learning disabilities, which further reinforces the need for a study in which African American adolescents with and without learning disabilities are the participants.

Motivation for secondary school success is a logical and understudied area to search for opportunities to better understand the academic achievement of African American students with and without LD. There is a lack of research that has explored how a learning disability or ethnic/racial identity influences adolescents' motivation to be successful on academic assessment tasks. To this investigator's knowledge, there is no study which has considered both factors with the guiding framework of the expectancy-value theory of motivation.

Method

The remainder of this chapter provides a content and methodological review of studies that have focused on the relationship between academic achievement outcomes and future enrollment outcomes and (a) expectancy-value motivation in adolescents, (b) the motivation of African American adolescents, or (c) motivation and adolescents with LD.

Search Procedures

Table 2. Summary of Studies: LD and Self-Efficacy and Self-Concept Variables

Study	Purpose	Participants	Results
Baird, Scott, Dearing, & Hamill (2009)	Examine whether youth with LD exhibit maladaptive cognitive self-regulatory patterns and provide an additional empirical test of some of the key predictors of the Dweck model of motivational model of achievement.	1,518 6th through 12th graders (686 males, 635 females, 197 no reported gender) aged 10-19 (*M* = 14.4) 96% Caucasian; 107 students with LD	The presence of a learning disability was associated with lower academic self-efficacy, less of an incremental view of intelligence, lower preference for learning goals, and less adaptive attributions for exerting effort in learning tasks.
Chapman (1988)	Investigate whether ongoing failure and low achievement levels in a group of unlabeled LD children is associated with the development of increasingly negative cognitive-motivational characteristics and which combination of these factors was best predictive of achievement outcomes for LD and non-LD students.	78 LD children (48 boys, 30 girls; *M* = 11.34, *SD* = 0.40) and 71 Non-LD children (42 boys, 29 girls; *M* = 11.30, *SD* = 0.38)	LD students had significantly more negative perceptions of ability, lower achievement expectations for future success, and relatively external perception of control regarding the causes of success and failure in school.
Crabtree & Rutland (2001)	Study 1: Investigate whether adolescents with moderate learning difficulties and non-disabled adolescents differ regarding the importance they attach to each dimension or attribute of comparison (attributing of negative feedback, selective comparison, devaluing of low performing dimensions) and compare the self-worth of adolescents with learning disabilities with that of a matched group of adolescents without learning disabilities.	Study 1: 145 students without learning disabilities (76 males and 69 females) aged 12-15, *M* = 13.53; 145 students without learning disabilities (73 males, 72 females) attending special needs schools aged 11-16 *M* = 13.80 Study 2: 68 students with LD attending special needs	Study 1: Adolescents with learning difficulties differ little from adolescents without learning disabilities in their self-evaluations, but do not relate scholastic competence to their global self-worth as do their peers.

	Study 2: Investigate the importance of social comparison in the construction of perceived self-competence amongst adolescents with learning disabilities.	schools (24 females, 44 males) aged 12-16 years, *M* = 13.66	Study 2: The implicit introduction of an intergroup social comparative content significantly reduced adolescents' self-evaluations.
Fulk, Brigham, & Lohman (1998)	Investigate the motivational characteristics of three groups of adolescents (a) students with learning disabilities, (b) students with emotional/behavioral disabilities, (c) students with average achievement (AA).	36 students with LD, 26 students with EBD, 53 AA students; 11 in grade 6, 39 in grade 7, 65 in grade 8.	Students with LD differed most from AA students and students with EBD, were more motivated to avoid work than their peers, more likely to believe the purpose of schools was to prepare them for jobs than to result in wealth and luxuries, male students with LD felt more alienated than students with EBD, and males in general reported more feelings of alienation than did their female peers.
Klassen (2006)	Use direct predictions of their performance as a proxy of their self-efficacy believes and measures of postdictions of literacy performance, self ratings of self-efficacy for self-regulated learning and their general self-efficacy to address academic efficacy beliefs of adolescents with LD.	68 students with LD (46 males, 22 females) and 65 non-LD (30 males, 35 females) in grades 8 and 9	Adolescents with learning disabilities displayed lower self-efficacy than the non-LD group, but were more optimistic (relative to their performance) in both domains assessed (spelling and writing).
Klassen (2010)	Examine validity of the Self-Efficacy for Self-Regulated Learning scale in sample of adolescents; compare levels of self-regulatory efficacy and related	146 early adolescents in grades 8 and 9 in Canada; 73 with LD (*M* = 13.89 years). And 73 non-LD students (*M*	The 7 item scale was a better fit than the 11 item scale; early adolescents with LD rated their self-regulatory efficacy lower than did their non-LD peers; self-

	variables in adolescents with and without LD; investigate whether self-regulatory efficacy made a unique contribution to the prediction of end-of term English grade beyond contributions of reading performance and reading self-efficacy; investigate the reading performance, self-efficacy, English grade, and SES of LD adolescents with high and low levels of self-regulatory efficacy.	= 13.93) matched for gender and age.	regulatory efficacy contributed significantly to the prediction of end-of-term English grades for LD and non-LD adolescents after controlling for SES and sex; there was no reading ability difference between the high and low self-regulatory students but students with lower self-regulatory efficacy came from lower SES families.
Lackaye & Margalit (2006)	Compare the social-emotional implications of academic achievement for students with and without learning disabilities and to identify the predictors of their effort investment.	571 seventh-grade students (292 boys and 279 girls) from 7 schools in Israel; 124 with LD (74 boys, 49 girls) and 447 children without (217 boys, 230 girls).	The grades and self-perceptions of students with LD were significantly different from those of their peers for all variables (grades, gender, effort, self-efficacy, loneliness, sense of coherence, positive mood, negative mood, hope).
Möller, Streblow, & Pohlmann (2009)	Test whether the Iinternal/external frame of reference model can be generalized to students with learning disabilities and in particular, to investigate whether and to what extent achievement in one subject has negative effects on self-concept in another in a sample of students attending schools for those with special educational needs.	270 students (55.9% female) attending grades 5-9 (M = 14.64 years; SD = 1.26) in Germany	The overall pattern of results confirms that the relationships posited in the I/E model can be generalized to our sample of students with learning disabilities. Achievement in a subject has a positive effect on the self-concept in the same subject but negative effect on the self-concept in the other subject, thus confirming the assumed domain-specificity of academic self-concepts for this population.

A search of EBSCO, Academic Search Premier, and PsychINFO peer-edited journals using the terms *expectancy value* and *motivation* produced 264 commentaries, descriptive and case studies, qualitative analyses, and quantitative studies between 1990-2009. To narrow this search, *adolescen**, *high school*, and *secondary*, and *secondary students* were uniquely entered as a third term, creating 18, 24, 17, and 1 "hits" respectively. A hand search of 2008 and 2009 volumes of *Learning Disabilities Research and Practice*, *Exceptional Children*, and *Journal of Special Education* was completed to focus on the use of special education populations in motivation research; this did not yield additional studies. An ancestral search of the narrowed lists of studies produced an additional 28 articles. After excluding commentaries, the result was 50 potential articles that included expectancy-value motivation and students with and without LD.

To find articles including African American students, PsychINFO was accessed and the search terms *African American, adolescents,* and *motivation* located 118 searches. Entering the term *academic* and the qualifier "peer-reviewed" narrowed the search to 27 articles. The same four terms were used in EBSCO alone and Academic Search Premier and Urban Studies databases concurrently, yielding 14 and 32 texts respectively. From those results, articles were removed if the abstract suggested that the behavior or process of interest was non-academic, such substance abuse, athletics, immigration, or divorce, or if only qualitative methods were employed. Fifty-five articles, many of which were found in multiple databases, were reviewed. The same process was repeated using the search term *Black* instead of *African-American*; the results were 42 articles, relevant ones of which overlapped with the previous search. Of these articles, a much smaller subgroup performed analyses using academic or social motivation as an independent variable and

academic achievement as a dependent variable. Many articles were discarded because motivation was the dependent variable, or because the independent variables were not motivation constructs. Completing an ancestral search of the chosen studies identified one additional study.

Studies were included if they had (a) expectancy- value motivation as the independent variable and adolescents participants, (b) academic achievement as a dependent variable and (c) adolescents with LD *or* African American adolescents as the participants *and* the independent variable was motivation, regardless of theory or framework. There were no studies based on the expectancy-value theoretical framework in which adolescents with LD participated; therefore, an analysis of motivation and adolescents was warranted and justifies a separate category of acceptable studies. A third category of studies purposefully sampling African American participants was also created to present information about these adolescents in which academic achievement or future course enrollment was the dependent variable.

Studies that established the validity or reliability of a new instrument, evaluated change in motivation over time, or solely performed exploratory or confirmatory analyses of motivation constructs were discounted. *Adolescent* was narrowed to include only students in grades 6-12 or approximately ages 11-18, thereby removing studies of college or elementary-age students. Lastly, because the focus of this review was the role of motivation in adolescent academic achievement, studies were excluded if non-academic measures such as athletic performance, peer relationships, or social standing were outcome variables. Applying these criteria, 24 studies comprised the final review.

Overview

Seventeen of the included studies were conducted in the United States, with the remaining completed in Europe (4), Canada (1), or Australia (1). One study compared students in the United States with those in Australia (Watt, Eccles & Durik, 2006). Thirteen studies- three of which included African American students -used the expectancy-value theory, four studies centered on adolescents with LD and another motivation theory and six focused on African American students and another motivation framework. In all of the studies, participants self-reported on at least one motivation construct using a Likert scale. In 10 of the 21 studies that included the race or ethnicity of the participants, the majority of adolescents (80% or higher) was European American and middle class students in suburban or urban settings; these studies represented 2 of the 4 studies of students with LD (50%) and 7 of the 12 (58%) studies of expectancy-value motivation. Nine of the studies (38%) purposefully included African American participants to represent at least half, if not all, of the sample. The most common academic measure was GPA or course grade; future course selection, educational aspirations, recreational literacy, or homework/academic pursuit time were also used as achievement variables.

Results

Content Findings

Information in Table 3 is grouped by population of interest and provides information about purpose, independent and dependent variables, measurement, data analysis methods, and results.

Purpose

Three studies (12%) focused on comparing the results between African American

Table 3. Summary of Studies: Content

Study	Purpose	Independent Variable(s)	Dependent Variable(s)	Participants	Measurement	Data Analysis Method(s)*	Results
			Studies with African American Participants				
Eccles, Wong & Peck (2006)	Examine the association of personal experiences of daily face-to-face racial discrimination with changes in academic motivation and engagement/achievement over the junior high years and to examine whether some aspect of ethnic identification can buffer the negative effects of those experiences.	Gender SES Adolescent perception of racial discrimination from teachers and peers Adolescent perception of future racial discrimination at work Report of future selves Parent perceptions of future racial discrimination at work Academic self-concepts Importance	GPA	629 African American students (47% female) participating in the Maryland Adolescent Development in Context Study (MADICS) 7th (Time 1) and 8th grade (Time 2) Median income for African American parents: $45,000-$49,000	Perceived daily face-to-face racial discrimination: 5-point scale developed by MADICS staff Perceptions of future racial job and educational discrimination: Yes/no prompt Parent perceptions of racial discrimination at work and in community: 5 point scale; 2 items Academic self-concept: 4 items, 7-point scale Importance value 2 items, 7 point scale Utility value: 4	Simple regression Ordinary least squares regression leading to path analysis Hierarchical regression	1. Measures of face to face discrimination at school significantly predicted school motivation and GPA at Time 1 (7th grade) 2. Self-concepts and task values at Time 2 (combined variable) both predicted GPA at Time 2 3. Neither school-based perceived racial discrimination variable predicted Time 2 GPA

		task value Utility task value			items, 7 point scale <u>Possible future selves:</u> Open ended questions about what students would like to be true of them in high school <u>GPA:</u> average 7th and 8th grade academic subjects		
Gutman (2006)	Examine how students and parent goal orientations and perceived classroom goal structures influence the mathematics grades and self-efficacy of low-income African American students during the high school transition.	Student mastery goal orientation Student performance goal orientation Perceived classroom mastery goal structure Perceived classroom performance goal structure	Mathematics self- efficacy Math GPA	50 students and parents (24 female adolescents) part of a longitudinal study in Michigan African American 8th grade (Time 1) and 9th grade (Time 2) Low to lower middle class socio-economic status (25% receiving public	<u>Student/classroom goal orientation/structure:</u> *Patterns of Adaptive Learning Survey (PALS)*, 26 items, 5 point scale <u>Parent goal orientation:</u> Open ended face-to-face questions, later coded in goal type (mastery, performance, personal, social, future, attendance) <u>Academic achievement</u>:	Mean differences Hierarchical regression	1. No significant mean differences across grades except in student performance goal orientation and math GPA. 2. The overall model accounted for 41% of the variance in math GPA from 8th to 9th grade. 3. Students with mastery goals in high school had more

				assistance)	Math GPA		positive changes in GPA than peers. 4. Parents who had mastery goals had students with higher math GPA.
Gutman & Midgley (2000)	Examine the main effects of protective factors (academic self-efficacy, parental involvement, perceived teacher support, feelings of school belonging) on the GPA of poor African American students during the middle school transition.	Academic self-efficacy Parental involvement Perceived teacher support Feelings of school belonging	GPA	62 students and parents (28 female adolescents) part of a longitudinal study in Michigan African American 5th grade (Time 1) and 6th grade (Time 2) Low socio-economic status (72% receiving public assistance)	<u>Academic self-efficacy</u>: *Patterns of Adaptive Learning Survey (PALS*)- 5 items, 5 point scale <u>Parental involvement:</u> *The Family School Survey Study*- 10 items, 6 point scale <u>Perceived teacher support</u>: *Classroom Environment Scale* – 8 items, 5 point scale <u>Feelings of school belonging</u>: scale adapted from other research- 5 items, 5 point	Correlations ANOVA Hierarchical regression	1. Students experience a significant decline in GPA across transition. 2. Students who were more academically efficacious had higher GPA across the transition; parental involvement, perceived teacher support, and feelings of school belonging did not significantly predict GPA across transition. 3. Students with high levels of

					scale <u>Overall GPA</u>: End of year core subjects (math, English, social studies, science) grades		both parental involvement and perceived teacher support had higher GPA across transition than peers with high levels of only one or none of those factors. 4. There were no significant interactions between academic self-efficacy and parental involvement, perceived teacher support, or school belonging.
Jodl, Michael, Malanchuk, Eccles, & Sameroff (2001)	Examine the direct and indirect pathways linking various aspects of parenting to occupational aspirations in an ethnically diverse sample of early adolescents growing up in	Gender Ethnicity GPA SES Youth's self concept, beliefs, and expectations	Occupational aspirations	444 7th graders in the Maryland Adolescent Development in Context longitudinal study Approximately 50% European American, 50% African American	<u>GPA:</u> Core subjects (math, English, science, social studies) average for 7th grade <u>Youth's self-concept:</u> 4 items, 7 point scale <u>Youth's value of education for the</u>	Multiple regression Logistic regression Hierarchical linear regression	1. Similar patterns across gender and race. 2. Parents' values and beliefs directly predict youth's values and beliefs, but only youth's educational expectations and

nondivorced families.	Parents' values, beliefs, and expectations Specific parenting behaviors Positive identification with parent	Middle class to upper middle class 2 parent families	future: 5 items, 7 point scale Youth's educational expectations/aspirations: 2 items, 5 point scale Parents' values, beliefs, and expectations: Chances for positive youth outcome- 3 items, 5 point scale; educational expectations/aspirations for youth- 2 items, 7 point scale; Perception of adolescent's academic skills- 4 items, 7 point scale Specific parenting behaviors: Parent report on academic activity involvement, instrumental support of talents, and involvement in child's school Positive identification with	aspirations significantly predicted professional career aspirations after controlling for gender and GPA.

					parent: 2 items, 4 point scale Occupational aspirations: open ended face-to-face questions later coded as professional or athletic		
Jordan (1981)	Assess the unique and common contributions of global self-concept, academic self-concept, and need for academic achievement to the variance in academic achievement of inner-city black adolescents.	Gender Global self-concept Academic self-concept Need for academic competence Verbal ability	GPA	328 8th graders (151 female) African American New York City Low socio-economic status (90% free and reduced lunch program); Title I funding; representative of 5 available achievement tracks	Global self-concept: *Rosenberg's Self-Esteem Scale*- 10 items Academic self-concept: *Self-Concept of Ability (General) Scale* Need for academic competence: *Need for Academic Competence Questionnaire*- 40 items, True or False Verbal ability: *Peabody Picture Vocabulary Test* GPA: Core subjects (math, English, science,	Regression analyses	1. Controlling for verbal ability, global self-concept did not contribute a unique variance in academic achievement for females or males. 2. Controlling for verbal ability, academic self-concept and need for academic competence each contributed a significant and unique amount to academic achievement for both females and males. This

					social studies) average for 8th grade (standardized grading procedure)		supports that these are separate and distinguishable constructs.
Kiefer & Ryan (2008)	Examine whether social goals (dominance, intimacy, popularity) measure in the fall of the school year predicted engagement (effort and disruptive behavior) and achievement (grades) measures in the spring.	Gender Ethnicity Social goals: dominance, intimacy, and popularity Self-reports of classroom engagement: effort and disruptive behavior Peer nominations of classroom engagement	GPA	373 6th and 7th grade students (53% female) in the Illinois Adolescent Transitions Project longitudinal study 52% African American; 48% European American Range of socio-economic status	<u>Social goals:</u> *Social Goal Questionnaire* – 4 items each for social dominance, intimacy, popularity, 5 point scale <u>Self- report of classroom engagement:</u> *Rochester Assessment of Intellectual and Social Engagement* – 4 items each for effort and disruptive behavior, 5 point scale <u>Peer nominations of classroom engagement:</u> "Which students in your class word hard and get good grades?" 5	Exploratory factor analysis Multiple regression	1. In both 6th and 7th grade, student endorsement of social dominance goals in the fall were associated with maladaptive forms of engagement and lower achievement in the spring. 2. African American students in both grades were higher on the social dominance goals and lower in 7th grade on the intimacy goals. 3. Being male was associated with higher levels of social

					nominations permitted <u>GPA:</u> Core subjects (math, reading, English, science, social studies) average for 7th grade (standardized grading procedure)		dominance goals. 4. Popularity goals were not associated with engagement or achievement in 6th or 7th grade, although for African American girls in 6th grade, they were associated with maladaptive engagement.
Long, Monoi, Harper, Knoblauch, & Murphy (2007)	Understand how three sources of motivation (interest, self-efficacy, and achievement goal orientation) may relate to the academic achievement of predominantly African American urban students during their transition to high school.	Gender Ethnicity Interest and self-efficacy Goal orientations	GPA	255 8th grade students (123 females) from 3 middle schools; 158 9th grade students (75 females) 9th: 87% African American 10% European American, 3% other; 9th: 72% African American, 22% European American, 6% other Midwestern city	<u>Interest and self-efficacy</u>: Six domains: history, math, science, reading, computer science, art. Interest – 2 items; Self-efficacy- 3 items <u>Goal orientations:</u> *Patterns of Adaptive Learning Survey (PALS)*- 18 items; additional scale- 6 items, 10 point Likert scale <u>GPA</u>: Core subjects (math,	MANOVA Multiple regression Hierarchical regression	1. Levels of efficacy and learning goals strongly predicted domain in both grades. 2. Self-efficacy consistently contributed to achievement in both grades. 3. Interest was a significant predictor of achievement in 9th grade.

				Range of socio-economic status (56% free and reduced meals)	reading/literature, science, social studies/history) average for 8th , 9th grade		4. Work avoidance goal had a negative effect on achievement in 9th grade. 5. Gender was a significant predictor of academic achievement in 8th grade only.
Powell & Jacob Arriola (2003)	Examine factors that might be associated with the academic achievement of African American high school students enrolled in a health sciences academy.	Demographic variables (Gender, Age, Grade, Absences, Tardiness) Altruism Classroom goal orientation Student social support Unfair treatment	GPA	84 10th, 11th, and 12th grade students (65 female) 15-18 years (*M* = 16.23 years; *SD* = .91) African American	Altruism: *Altruism Test*- 21 items, 5 point Likert scale Classroom goal orientation: 21 items, 5 point Likert scale Student social support: *Student Social Support Scale* – 15 items, 5 point Likert scale Unfair treatment: *Unfair Treatment Index*- 1 item, 2 point scale GPA: Overall school year GPA	Multiple Regression	1 Without controlling for demographic variables, none of the other variables was significant. 2. Holding constant for gender and absences from school, classroom goal orientation (academic motivation) was not found to be significantly associated with GPA.
Winston,	Study 1:	Study 1:	Study 1:	Study 1:	Study 1:	Study 1:	Study 1:

Eccles, Senior, & Vida (1997)	Test the extent to which global self-concept of ability and valuing of education predict changes in grades over time.	Self-concept of academic ability Utility value Self-concept of sport ability Self-concept of social ability Self-esteem	GPA	976 adolescents 544 African American (294 female) 432 European American (233 females)	<u>Self-concept of academic ability:</u>4 Likert scale items <u>Utility value</u>: 3 Likert scale items <u>Self-concept of sport ability</u>: 2 Likert scale items <u>Self-concept of social ability</u>: 2 Likert scale items <u>Self-esteem:</u> 6 Likert scale items <u>GPA:</u> computing average from the students' reports of the of A, B, C,D, and F's; A = 4, F= 0.	Multiple Regression	1. African American and European American students, the self-concept of academic ability yielded reliable predictability of change in academic achievement scores. Utility value did not. 2. Academic self-concept was the most powerful predictor of self-esteem for European American students than for African American students.
	Study 2: Test the extent to which self-concept of math ability and valuing of education predict changes in grades over time.	Study 2: Math ability self-concepts English ability self-concepts Self-concept of sport ability Self-concept of social ability	Study 2: Math grade	Study 2: 2500 6th grade students 2320 European American 180 African American	Study 2: Math ability self-concepts: 7 point Likert scale items English ability self-concepts: 7 point Likert scale items Self-concept of sport ability: 7	Study 2: Multiple Regression	Study 2:

		Perceived math values Global self-esteem			point Likert scale items Self-concept of social ability: 7 point Likert scale items Perceived math values: 7 point Likert scale items Global self-esteem: 7 point Likert scale items		1. Math ability self-concept did not predict changes in math grades for either European or African American students. 2. Math ability self-concept and math value predicted plans to take more math courses for both European and African American participants. 3. African American students' ability self-concepts were significantly related to their global self-esteem.
Studies with Adolescents with Learning Disabilities							
Deci, Hodges, Pierso, & Tomassone (1992)	Explore the intercorrelations of the motivationally relevant variables and test	Self-regulation Coping Locus of control	Standardized test scores	136 elementary and 321 junior high and high school students coded LD or EH	Self-regulation: *Academic Self-Regulation Questionnaire*, 16 items, 4 point Likert scale	One-way ANOVA	1. Motivational self-perceptions and perceptions of home and classroom contexts

the utility of these variables for predicting the effective functioning of students with handicaps in self-contained classrooms.	Competence Classroom context Home Context	high school students 12- 21 years (*M* = 16.7 years for LD students) Predominantly European American and middle/lower middle class Self-contained special education classrooms	Coping: *Academic Coping Inventory (ACI)*, 5 items Locus of control: *The Multidimensional Measure of Children's Perceptions of Control (MMCPC):* 8 items, 4 point Likert scale Competence: *Perceived Competence Scale*, 28 items, 4 point Likert scale Classroom context: *The Classroom Context* , 24 items, 4 point Likert scale Home context: *The Home Context*,11 items, 4 point Likert scale Standardized test scores: *Stanford*	predicted math and reading achievement for junior and high school students with and without learning disabilities. 2. For students with LD, competence and involvement variables tended to be more central to patterns of intercorrelations and predictions of independent variables.

					Achievement Test		
Sideridis (2006)	Evaluate the regulation of goal orientations and strong "oughts" in students with learning disabilities.	Goal orientation Emotionality Depression Anxiety On-task behavior Fear of failure Ought self	Math achievement	132 5th and 6th graders with LD (59 female) Greek	Goal orientation: 8 items Mastery; 10 items Performance-approach, 7-point Likert scale Emotionality: *PANAS*- 20 items Depression: *Childhood Depression Inventory* – 27 items, 3 point scale Anxiety: *Revised Children's Manifest Anxiety Scale*- 28 items, 3 possible responses On-task behavior: Time spend on math tasks Fear of Failure: 5 items Ought-self: 4 items	Effect size Latent variable modeling	1. Oughts have a basis in avoidance motivation. Students who were motivated by strong "oughts" persisted significantly less than other students with LD. 2. Students who pursued multiple goals persisted 37% longer than those motivated by oughts. 3. Mean comparisons of students with and without LD showed that the former were inferior in motivation and achievement and obtained significantly higher scores on anxiety and depression.

					Math achievement: Math CBM Math achievement: Math semester grade Math achievement: 15 grade appropriate curriculum-modeled exercises		
Sideridis (2005)	Evaluate the contribution of goal orientation over and above the constructs of planned behavior theory in explaining the relationship between attitudes, motivation, and academic achievement for students with and without learning disabilities.	Performance approach-avoidance goal orientations Perceived control/ efficacy Attitudes Normative beliefs Intention	Math competence	152 fifth graders (79 male) 116 general education (58 male) 36 LD (15 female) Greek	Goal orientation: 15 items, 7 point scale Perceived control and efficacy: 9 items, 7 point scale Attitudes: 3 items, 7 point scale Normative beliefs: 2 items Intention: 2 items Math competence: 15 curriculum based items	One and two way ANOVA Path analysis	1. 68% of the variance in math achievement for students with LD could be accounted for by all of the variables; 54% of the variance for students with out LD in math achievement was accounted for by all variables. 2. Students with LD had significantly weaker motivation as expressed from

							their low intention to achieve, low perceived control, weak attitudes toward their goals, and lower mastery or performance approach orientations
Wiest, Wong, Cervantes, Craik, & Kreil (2001)	Explore the differences in academic achievement and variables related to intrinsic motivation (competence and autonomy) among regular education, special education, and alternative education students.	Competence Perceived control Perception of autonomy Perception of autonomy support from peers Coping	GPA	251 juniors and seniors 42% European American 29% Latino 9% Asian 4% Black 16& Other	<u>Competence</u>: *Perceived Competence Scale for Children* Likert scale <u>Perceived control:</u> *The Multidimensional Measure of Children's Perceptions of Control (MMCPC)* <u>Perception of Autonomy:</u> *Children's Perceptions of Parents*- 4 point scale . <u>Perception of teacher and classroom:</u> *Origin*	ANOVA	1. The regular education students had significantly higher self-reported academic competence than did special education and alternative education students. 2. The regular education students had higher grade point averages than did the special education and alternative education groups.

					Climate Questionnaire- 4 point scale <u>Perception of peer support of autonomy</u>: *Peer Autonomy Scale*- 4 point scale <u>Coping:</u> *Academic Coping Inventory (ACI)*- 4 subscales, 4 point scale <u>Academic achievement</u>: GPA		
Expectancy-Value Studies with Adolescent Participants							
Berndt, T.J. & Miller, K.E. (1990)	Explore the relationship between expectancies (of success) and values and the relative contribution of each to achievement.	Student expectancies for success Values Attribution theory	GPA Track placement	153 7th graders (99 female; *M* = 13.3 years) Predominantly European American Range of socio-economic status	<u>Involvement</u> *Classroom Environment Scale*- 12 items, 5 point scale <u>School value</u>: 18 items, 5-point scale <u>Perceived scholastic competence</u> subscale of *Self-Perception Profile for Children*- 6 items, 4-point	SEM	1. Students' achievement is more strongly related to their expectancies for success than to the value they attach to success. 2. Students' expectancies and values are positively related.

					scale <u>Attribution</u> 10 items, 5 point scale <u>Academic Achievement:</u> Grades in English and math, reported by classroom teachers		
Crombie, G., Sinclair, N., Silverthorn, N., Byrne, B.M., DuBois, D.L. & Trinnier, A. (2005)	Relations of key constructs of the Eccles and colleagues' (2000) model of achievement were examined as predictors of math grades and enrollment intentions for 9th grade students and possible sex differences in expectancies and values related to academic success.	Gender Competence Intrinsic value Utility value (usefulness)	Future math course enrollment Math grades	540 students in Grade 9 (277 female) Canadian (European American) 90% English speaking students Middle SES	<u>Academic competence beliefs</u> 4 items, 7-point Likert scale <u>Intrinsic value:</u> 4 items, 7-point Likert scale <u>Utility value:</u> 4 items, 7-point Likert scale <u>Intention to enroll</u>: 1 item, 7-point Likert scale <u>Academic achievement:</u> Math grades (percentages)	CFA SEM	1. For both males and females, competence beliefs were a direct predictor of math grades 2. For females, competence also predicted enrollment intentions. 3. For females, utility and competence had the same significance in future course enrollment. 4. The path from intrinsic value to

							intentions to enroll in more math courses was not significant for either boys or girls. 5. Utility value predicted enrollment for both girls and boys.
DeBacker & Nelson (1999)	Investigate relationships among motivational variables from goal theory and expectancy-value theory and assess the proportion of variance for in science effort, persistence, and achievement by variables in the motivation model.	Learning goals Pleasing teacher Instrumentality value Perceived ability Perceived science difficulty Attainment value Utility value Cost value Intrinsic value	Science grades Persistence Effort	157 students (82 female; 6 unreported) 20 9th graders; 133 10th graders (4 unreported)	Learning goals: 5 items, 5 point Likert scale Performance goal: 6 items, 5 point Likert scale Pleasing the teacher: 4 items, 5 point Likert scale Perceived instrumentality 4 items, 5 point Likert scale Perceived ability: 8 items scales, 5-point Likert scale Perception of science difficulty:	Factor analysis Multiple regression	1. For the whole sample, gender and goals were not significant. Values and beliefs were significant change in R^2. 2. For males and females when analyzed separately, goals, values, beliefs, and gender roles were significant.

Gender schemata	4 items, 5 point Likert scale Stereotyped views of science: 5 items, 5-point Likert scale Attainment value: 4 items, 5 point Likert scale Utility value: 4 items, 5 point Likert scale Cost value: 4 items, 5 point Likert scale Intrinsic value: 6 items, 5 point Likert scale Bem Sex Role Inventory Academic achievement: Science grade Self-report effort Self-report persistence

Durik, I.K., Vida, M. & Eccles, J.S. (2006)	Investigate motivational predictors of students' choices to involve themselves in leisure activities, high school courses, and careers that exercise literary skills.	Self-concept and expectancy for success Intrinsic value Utility value Attainment value Academic achievement SES Gender	Time spent reading for pleasure Number of high school language arts courses taken Literacy-related career aspirations	10th grade students (53% female) 6 high schools participating in the Childhood and Beyond Study (Eccles, et al., 1993) 91.6% European American Median family income between $40,000-$50,000 a year	<u>Self-concept of ability and expectancies</u>: 5 items, 7 point Likert scale <u>Intrinsic value:</u> 3 items, 7 point Likert scale <u>Utility value items</u> 4 items, 7 point Likert scale <u>Academic achievement</u>: Grade reports <u>Leisurely reading time</u> <u>Number of high school language arts courses</u> <u>Career aspirations</u>	Path analysis SEM	1. Self-concept of ability predicted all three achievement outcomes 2. 10th grade importance of English predicted high school courses and career aspirations 3. Intrinsic value predicted amount of time spent reading for leisure and high school language arts class enrollment
Greene, B.A., DeBacker, T.K., Ravindran, B., & Krows, A.J. (1999)	Examine a modified expectancy value framework for exploring gender differences in motivation toward math	Perception of task difficulty Learning goals Performance goals Pleasing the teacher	Percentage of course points earned Effort	366 students in grades 10 -12 (212 females; 8 unreported) Suburban large Midwestern high school	<u>Math difficulty/ perception of task difficulty:</u> 4 multiple choice items, 5 point Likert scale <u>Learning goals</u>: 5 items, 5 point Likert scale	Factor path analyses MANOVA Hierarchical regression analyses	1. For the whole sample, grade level, class, and gender only accounted for a small amount of variance in achievement. 2. For the whole

	and whether the inclusion of task-specific goals would provide a clearer view of gender differences.	Future goals Intrinsic value Utility value Attainment value Perceived ability Math class Gender		European American 82%, Native American 8%, Hispanic 5%, African American4%, Asian American 2% Middle class	<u>Performance goals</u>: 4 items, 5 point Likert scale <u>Pleasing the teacher</u>: 4 items, 5 point Likert scale <u>Future goals</u>: 2 items, 5 point Likert scale <u>Intrinsic value</u>: 3 items, 5 point Likert scale <u>Utility value:</u> 4 items, 5 point Likert scale <u>Attainment value</u>: 2 items, 5 point Likert scale <u>Perceived ability</u>: 8 items, 5 point Likert scale		sample, goals, values, and beliefs all explained significant percentages of variance in achievement that were similar in magnitude. 3. When divided into four subgroups (by gender and class level), all combined variables accounted for 45% - 54% of the variance for each group.
Guthrie, Wigfield, Metsala, & Cox (1999)	Generalize the finding that controlling for past achievement, reading efficacy, and prior	Reading motivation (intrinsic and extrinsic motivation) Reading efficacy	Reading amount Text comprehension	10th grade students who were also in the 8th grade sample Population from the National Educational	<u>Passage comprehension</u>: Cognitive test of 21 multiple-choice items. <u>Reading amount:</u> questionnaire	Multiple regression	1. Reading motivation significantly predicted reading amount when accounting for variables of

	knowledge, reading motivation predicted reading amount and reading amount significantly predicted reading comprehension.	(self-efficacy and self-concept for reading)		Longitudinal Study	containing 15 items of leisure activities to be rated 1-4. Motivation: "Why are you taking various subjects?" and "How often do you try as hard as you can?" with 4 responses each. Reading efficacy: 25 questions related to self-concept.		previous achievement, SES, and reading efficacy. 2. The amount of variance explained by reading motivation was three times higher than any other background variable or student characteristic. (p. 248-9)
Nagy, Trautwein, Baumert, Koller, & Garrett (2006)	Investigate gender differences in relations between domain-specific achievement, self-concept, intrinsic value, and academic choices in upper secondary school.	Domain-specific self-concept Intrinsic value Gender	Course enrollment Gender differences in self-concept and intrinsic value Gender effects mediated by self-concept or intrinsic value	1148 students (60% female) from 46 schools Longitudinal study; first wave collected in 10th grade; second wave in 12th grade taken from a German	Self-concept:10 items, 4 point Likert scale Intrinsic value: 4 items, 5 point Likert scale Math achievement: 30 items from the test chosen by the testing agency using Item Response Theory (IRT) Biology achievement 21	SEM	1. Males scored higher on math self-concept and intrinsic value and were more likely to enroll in a math class 2. Females scored higher on biology self-concept and intrinsic value and were more likely to enroll in a biology class 3. Subject-

					items from the test from testing agency using IRT <u>Course selection</u> in grade 12		specific self-concepts and intrinsic values were positively correlated with course enrollment in the same domain, but negatively correlated to course enrollment in the other domain 4. The effects of gender were completely mediated by achievement, self-concept, and intrinsic value components
Simpkins, Davis-Kean, & Eccles (2006)	Examine the longitudinal relationship between youths' math and science choices and their expectancies and values from middle childhood	Gender 5th grade: Active participation in math and science activities Math and science grades	12th grade: High school courses in math and science	227 students (54% female; *M* = 8.33, *SD* = .32) from 12 schools from 3 school districts from the Childhood and Beyond Study (Eccles, et al., 1993)	<u>Math self-concept</u>; 5 items, 7 point Likert scale <u>Math importance:</u> 3 items, 7 point Likert scale <u>Math interest:</u> 3 items, 7 point Likert scale	MANOVA Bivariate correlations SEM	1. The number of high school courses was more strongly related to self-concepts than values. 2. Youth who believed that they were they were skilled in a

	through adolescence.	6th and 10th grade: Math self-concept Science self-concept Math importance Science importance Interest in math Interest in science 5th and 10th grade: Family annual income Parent education		93% European American Predominantly English speaking (93%) Family income median = $50,000-$59,000; range $10,000-$80,000 (1989)	Science self-concept; 3 items, 7 point Likert scale Science importance; 2 items, 7 point Likert scale Science interest: 2 items, 7 point Likert scale Number of math courses in high school Number of science courses in high school		particular domain or had an interest in the domain where more likely to continue to pursue this endeavor during adolescence than their peers. The associations emerged above the predictive power of children's achievement, parents' education, and family income. 3. Girls had lower math self-concept than boys.
Steinmayr & Spinath (2009)	Examine to which extent different motivational concepts contribute to the prediction of school achievement	Achievement motives Goal orientation Ability self-perception	Math grades German grades	342 11th and 12th grade students (204 female, *M*= 16.94 yrs) German Upper middle	Intelligence: *Intelligence Structure 2000 R* (German) Achievement motives: *Achievement Motivation Scale*;	Hierarchical regression analyses	1. All constructs predict achievement except for performance goals 2. Ability self-concepts explain

	among adolescent students independently from intelligence in math and German.	Intrinsic value Importance value Utility value		class	subtest of *Personality Research Form* <u>Goal Orientation:</u> German self-report goal orientation measure <u>Ability self-perceptions:</u> 4 items, 5 point Likert scale <u>Intrinsic value</u>: 3 items, 5 point Likert scale <u>Importance value:</u> 3 items, 5 point Likert scale <u>Utility value:</u> 3 items, 5 point Likert scale <u>Achievement:</u> GPA		more than intelligence in both domains (math and German) and more than values, although differences were small for the latter 3. Motivational constructs nearly explained as much unique variance in general school performance as intelligence 4. When controlling for prior achievement, motivation and not intelligence contributed to the prediction
Watt, H.M.G. (2006)	Establish the extent to which boys' math participation exceeds girls'; examine the nature and	Gender Prior achievement Intrinsic value	Math-related career aspirations Math course selections	459 students (57% male) grades 9-11 Australian Asian (22%)	<u>Prior achievement</u>: *Standardized Progressive Achievement Tests* Self-perception	MANOVA Regression analysis	1. Students with higher intrinsic values and self-perceptions of mathematical talent and success

	extent of gender differences on adolescents' prior math achievement, math-related self-perceptions, intrinsic and utility values, and perceived difficulty; model influences of gender, self-perceptions, intrinsic and utility value and perceived task difficulty on course and career participation.	Utility value Self-perception Perceived task difficulty			Intrinsic value Utility value Perceived task difficulty <u>Intended and current math enrollment</u> <u>Intended career plans</u> <u>Math-relatedness of career plans created via The Occupational Information Network</u>		expectancies subsequently selected higher math course levels even when controlling for prior achievement. 2. Perceptions of task difficulty exerted indirect effects on maths enrollment choices via influence on intrinsic value and self-perceptions. 3. Utility value did not affect enrollment or intended career plans.
Watt, Eccles, & Durik (2006)	Examine gendered math participation in senior high school within two longitudinal samples from Australia and the USA and	Self-perceptions Intrinsic value	Math course level selection	459 9th graders (43% female) Australian Asian (22%) Upper middle class	<u>Self-perceptions</u> <u>Intrinsic value</u> <u>Math course level selection</u> : Grade 11 math course level selection	SEM	1. No gender differences were found in the USA sample. 2. Ability/expectancy beliefs influenced both math

associated motivational influences.					participation and achievement when prior math achievement was controlled. 3. In both samples, intrinsic value positively impacted subsequent choices for participation in math.
	Self-concepts/ expectancies Intrinsic value Importance value	Number of math classes	266 10th graders (52% female) United States 95% European American Upper middle class	<u>Self-concepts/ expectancies</u> <u>Intrinsic value</u> <u>Importance value</u> <u>Number of math classes:</u> Total number students took in 11th and 12th grade	

Note: CFA: Confirmatory Factor Analysis; SEM: Structural Equation Modeling.*These are described in the terms provided by the authors.and European American students and six studies (25%) investigated motivation constructs and academic outcomes in African American students. Three studies (12%) analyzed the differences and similarities in the relationship between motivation of students with and without LD and academic achievement in inclusive settings (Sideridis, 2005, 2006; Wiest et al., 2001); one study used only students with LD in self-contained classrooms (Deci et al., 1992). The majority of studies (54%) sought to examine the relationships between expectancy-value motivation constructs and adolescent academic achievement as measured through GPA, future class enrollment, tracking placement, literacy tasks, specific course grades, or future career aspirations. Eight studies (32%) included hypotheses about gender differences. One study compared longitudinal results from two countries for the purpose of understanding girls' math achievement and course selection.

Participants/Settings

Students' ages ranged from early (*M* =11.38 years, *SD* = 1.56; Sideridis, 2006) to late adolescence (*M* = 16.23 years, *SD* =.91; Powell & Jacob Arriola, 2003); 18 studies (75%) did not provide information about the age of participants, but all indicated that students were in 5^{th} through 12^{th} grade. Overall, the studies using expectancy value constructs did not reflect a diverse population. Three studies (13%) did not report the race of the participants (Debacker & Nelson, 1999; Guthrie et al. 1999; Nagy et al.,2006), but those that did reflected predominantly European American students (80% or higher) from either the United States (Berndt & Miller, 1990; Deci et al., 1992; Durik et al., 2006; Greene et al., 1999; Simpkins et al., 2006), Canada (Crombie et al., 2005), or Europe

(Sideridis, 2005,2006; Steinmayr & Spinath, 2009). Of the studies that took place in the United States, only two included students of African-American, Asian, American Indian, mixed race, and/or Latino/Hispanic heritage in approximately the same representation as their national population (Greene et al., 1999; Wiest et al., 2001) unless African American students were purposefully sampled (35%). Only one study, which took place in Australia, included a sizable sample of Asian students (22%; Watt, 2008). All of the studies except one (Guthrie et al., 1999) reported the gender of the participants; overall, more females than males participated in the reviewed studies.

Four studies purposefully sampled students with special education needs, including those with LD (Deci et al., 1992; Sideridis, 2005, 2006; Wiest et al., 2001); three of those took place in general education settings, and the fourth in schools for students with learning or emotional needs.

Six studies took place outside of the United States (Nagy et al., 2006; Sideridis, 2005, 2006; Steinmayr & Spinath, 2009; Watt, 2006; Watt et al., 2006) and 12 studies (52%) used longitudinal datasets (Crombie et al., 2005; Durik et al., 2006; Eccles et al., 2006; Guthrie et al., 1999; Gutman, 2006; Gutman & Midgley, 2000; Jodl et al., 2001; Nagy et al., Simpkins et al., 2006; Watt, 2006; Watt et al., 2006).

Most studies reported the SES for their sample (79%).

Independent Variables

The most commonly tested expectancy-value construct was self-concept (Durik et al., 2006; Jodl et al., 2001), also referred to as perception of ability (Greene et al., 1999) ability self-concept/self-perception (Steinmayr & Spinath, 2009), academic self-concepts (Eccles et al., 2006), domain-specific self-concept (Greene et al.; Nagy et al., 2006;

Simpkins et al., 2006; Winston, Eccles, Senior, & Vida, 1997), self-perception (Deci et al., 1992), perceived ability (DeBacker & Nelson, 1999), or competence (Crombie et al., 2005; Wiest et al., 2001). In the study by Guthrie et al. (1999), reading efficacy was considered a domain specific self-efficacy, (self-concept), for reading and Gutman (2006) referred to academic self-efficacy. Perceived difficulty of a domain-specific task was evaluated in three studies (DeBacker & Nelson, 1999; Greene et al., 1999; Watt, 2006). DeBacker and Nelson were interested in the perceived difficulty of a high school biology class, and Greene et al. and Watt investigated the perceived difficulty of math tasks. These studies were parsed from those briefly reviewed at the beginning of the chapter because of the presence of an academic achievement variable, and also because the authors chose to use the expectancy-value theory of motivation as their framework. In other studies of these constructs, other theories, such as Bandura's self-efficacy (1997), were used to frame the analysis and results.

Task values were also common variables. In seven studies, intrinsic value and utility value were each parsed from other task values and separately entered into data analyses (Crombie et al., 2005; DeBacker & Nelson, 1999; Durik et al., 2006; Greene et al., 1999; Nagy et al., 2006; Watt, 2006; Watt et al, 2006). Utility value was also a frequently tested task value (Crombie et al.; Durik et al.; Eccles et al., 2006; Greene et al.; Jodl et al., 2001; Watt; Watt et al.; Winston et al., 1997). Attainment value was used in three studies (DeBacker & Nelson; Durik et al. Greene et al). Cost value was only assessed by DeBacker & Nelson. Importance value, the combined factor of utility and attainment value, was entered into analyses in three studies (Eccles et al; Simpkins et al., 2006; Watt et al.). Greene et al. slightly modified the expectancy-value model and

collapsed intrinsic, utility, and attainment value into one “task-specific values” variable.

Fourteen studies (56%) tested multiple constructs from different motivation theories with academic achievement outcomes or future course enrollment. Goal orientation, structure, or content was used in addition to expectancy-value motivation in three studies (DeBacker & Nelson, 1999; Green et al., 1999; Steinmayr & Spinath, 2009), with students with LD (Sideridis, 2005; 2006) and with African American students (Gutman, 2006; Long et al., 2007; Powell & Jacob Arriola, 2003). Other constructs of interest included talent perceptions (Watt, 2006; Watt et al, 2006) social support, unfair treatment and altruism (Powell & Jacob Arriola), social goals (Kiefer & Ryan, 2008), verbal ability (Jordan, 1981), racial discrimination (Eccles et al., 2006), emotion/affect (Sideridis, 2006), school belonging (Gutman & Midgley), reading motivation (Guthrie et al., 1999), and pleasing the teacher (DeBacker & Nelson, 1999). Studies of African American students often used social motivation constructs in addition to the academic variables.

Many authors were interested in the role of gender (Crombie et al., 2005; Debacker & Nelson; Greene et al., 1999; Jodl et al., 2001; Long et al., 2007; Nagy et al., 2006; Simpkins et al., 2006) and it was frequently incorporated in a study when initial analyses indicated that it acted as a mediator. Other control variables included SES, ethnicity, and prior achievement.

Dependent Variables

The academic achievement variable took three major forms. Fifteen studies used overall grade point average (GPA; Powell & Jacob Arriola, 2003; Wiest et al., 2001), GPA for major subjects (Eccles et al., 2006; Gutman & Midgley, 2006; Jordan, 1981;

Kiefer & Ryan, 2008; Long et al., 2007; Winston et al., 1997), or subject specific grades (Berndt & Miller, 1990; Crombie et al., 2005; DeBacker & Nelson, 1999; Greene et al., 1999; Gutman, 2006; Sideridis, 2006; Simpkins et al., 2006; Steinmayr & Spinath, 2009). Four of those studies used math grades as an outcome (Crombie et al.; Greene et al.; Gutman, 2006; Sideridis 2006), and another science grades (DeBacker & Nelson, 1999). Steinmayr & Spinath used math and German averages to evaluate differences in the subject-specificity, Simpkins et al. did the same with science and math grades, and Berndt & Miller with math and English.

Nagy et al. (2006), Berndt and Miller (1990), Crombie et al. (2005), Durik et al. (2006), Simpkins et al., (2006), Watt (2006), Watt et al. (2006) and Winston et al. (1997) predicted course enrollment with motivation constructs. Three studies asked students to report their career aspirations (Durik et al; Jodl et al., 2001; Watt). Other dependent variables included reading amount and text comprehension (Guthrie et al., 1999), standardized test scores (Deci et al., 1992; Watt et al.), and curriculum measures (Sideridis, 2005; 2006).

Measurement

Motivation. All of the studies used a Likert scale for at least one measure of motivation, and students completed self reports in each instance. Two studies also used open-ended interview questions (Eccles et al., 2006; Gutman, 2006), and parent beliefs were recorded in interviews or self-reports in two studies (Gutman & Midgley, 2000; Jodl et al., 2001). Adequate reliability for this review reflects the guidelines established by Nunnally and Bernstein (1994): for the purposes of basic research, measures should have a reliability of at least .80; if important decisions are to be made with the test (e.g.,

placement), then the measure should have a reliability of .90 or higher. A reliability of .70 is only acceptable in the early stages of research, which is not relevant to the included studies. Only one of the 23 studies (4%) used only published tests with reported reliability and validity to measure motivation: Wiest et al. (2001) evaluated how various motivation constructs related to GPA with six measures for which reliability coefficients (r = 60 - .91) had been previously established. Deci et al. (1992) used three of those measures, along with another published test, and two adapted surveys about classrooms and home context. Available reliability for those measures, in addition to those used by Wiest et al., was reported (r = .65 - .76), but the context surveys did not have reliability coefficients. In both of these cases, recorded alpha coefficients varied in their acceptability given the researchers' purposes.

Most authors combined formal assessments with their own measures and those created by other researchers. Sideridis's (2006) goal orientation items came from multiple scales with reported reliability and validity established in other studies**.** A fear of failure subscale and two published measures were used to evaluate students' emotions. Sideridis also created an ought-self motivation measure that he validated through exploratory factor analysis in a earlier study. The author reported reliability for all of these measures**.** In another study, Sideridis (2005) used items taken from multiple reliable and valid studies to evaluate goal orientations, as well as Bandura's (1982) *Guide for Constructing Self-Efficacy Scales* to create a nine-item scale. The author also reported reliability for scales made to measure attitudes, normative beliefs, and intention. In the case of the normative beliefs, reliability was low, with alpha coefficients of .54 and .59 for non-LD and LD students respectively; other coefficients were acceptable (r = .69-.92; Nunnally

& Bernstein, 1994). Berndt and Miller (1990) combined the *Self-Perception Profile for Children* (Harter, 1985), an adapted version of the *Classroom Environment Scale* (Moos & Tricket, 1974), and author-modified school value and attribution measures used in multiple previous studies to evaluate participant motivation. Reliability for these measures ranged from .38 to .84, with the majority of values falling between .70 and .77.

Steinmayr & Spinath (2009) reported reliability coefficients for the formal intelligence measure and several motivation scales used in their study and for the self-perception and subjective tasks values items that they created for a previous study. Similarly, Nagy et al. (2006) created an intrinsic value measure from an unnamed and unpublished "established German instrument" (p. 330), and reported the reliability of that measure as well as all that were used. Simpkins et al. (2006) reported reliability for their measures of math and science self-concept as well as those for math and English importance value and interest (intrinsic value) from other researchers' studies.

To evaluate task values, authors compiled items from other studies or their prior research. Watt (2006) and Watt et al., (2006) constructed items for talent perceptions success expectancies in previous studies and used those in addition to intrinsic and utility value items created by other researchers' studies. Crombie et al. (2005) made a questionnaire about competence, usefulness, and intrinsic value from items created for and validated in multiple other studies. A similar process was used by Durik et al. (2006) to generate task beliefs items. DeBacker and Nelson (1999) pulled items from a study by Wigfield (1994) and others as well as scales about learning goals, pleasing the teacher, perceived instrumentality, and perceived ability and their own intrinsic value scale. Greene et al. (1999) followed a similar path with their measures. Winston et al. (1997)

used the measure provided in the Maryland Adolescent Development in Context (MADIC) longitudinal dataset. In each of these studies, the authors provided adequate information about the reliability of the measures they used.

Academic achievement. Measurement of academic achievement included standardized test scores (Deci et al., 1992; Nagy et al., 2006; Watt et al., 2006), overall and major subject GPA, course grades, and/or classroom-based assessments (Sideridis, 2005, 2006). Enrollment intentions were obtained through author-created surveys (Guthrie et al., 1999; Winston et al., 1997) and school records (Durik et al., 2006). In a unique and particularly well-developed use of information, Simpkins et al. (2006) used their longitudinal database to follow students through 12th grade and were able to record not enrollment intentions, but actual classes taken during high school. Career and academic aspirations were measured through a computer program, the Occupational Information Network (Durik et al.; Watt, 2006). No reliability coefficients were reported for any of these measures of academic achievement, including standardized assessments, with the exception of Watt et al.'s math assessment.

Data Analysis

A variety of methods were used to explore the non-experimental relationships between motivation constructs and academic achievement. In all studies, the authors provided descriptive statistics and correlations about the variables. Preliminary correlations often justified further analysis of gender or race; exploratory and confirmatory factor analyses were also used to support the validity of motivation constructs before final analyses were run. Structural equation modeling was used in five studies (21%), and other forms of regression (hierarchical, multiple regression analysis)

were used in an additional 14 studies (56%). ANOVA was the single or final method of analysis in four studies (16%). Effect size was used in one study (4%) to show the differences between two groups of students (Sideridis, 2006). MANOVA was used four times as part of a larger analysis.

Results

Twenty-two of the twenty-four studies found a positive, although not always significant, relationship between a motivation construct and the academic achievement outcome or future course enrollment.

African American participants. The nine studies focusing on African American students came to a consensus about the relationship between motivation and academic achievement. In studies of transitions between elementary and middle school or middle and high school, grades declined from one year to the next. However, students with mastery goals experienced more positive changes in their math GPA than their peers, even when controlling for the previous year's mastery goal orientation (Gutman, 2006) and students who felt more academically efficacious after the transition also had higher GPA than their peers (Gutman & Midgley, 2000; Long et al., 2007). Similarly, in a study of 8th graders, academic self-concept and the need for academic competence were both significant predictors of academic achievement (Jordan, 1981). Jodl et al.'s study of 7th graders found that the closely related construct expectancies for success predicted professional career aspirations. Winston et al. (1997) found that utility value and self-concept were predictors of GPA in their preliminary study, but in the follow-up found that only math utility value was significant when prior achievement was entered; both variables predicted future course enrollment.

Analyses of social motivation constructs indicated that social dominance goals were associated with lower GPA for European American girls but not African American girls after a school transition (Kiefer & Ryan, 2008). Other studies that focused on social motivation constructs as predictors of academic achievement concluded that students who had a positive cultural identity had a resulting higher level of engagement and valuing of school, which correlated with higher academic achievement (Eccles, Wong, & Peck, 2006). Only Powell and Jacob Arriola (2003) found that motivation did not influence academic achievement.

Participants with learning disabilities. Wiest et al. (2001) determined that students in general education classrooms had greater perceived competence as well as higher GPA's than their peers in special education (students with LD, as documented by an IEP) or alternative placements. This study was not domain-specific, unlike the majority included in this review (Crombie et al., 2005; DeBacker & Nelson, 1999; Deci et al., 1992; Durik et al., 2006; Guthrie, et al., 1999; Nagy et al., 2006; Steinmayr & Spinath, 2009; Watt, 2006; Winston, et al., 1997).

Also focusing on students with LD, Deci et al. (1992) concluded that motivational self-perceptions predicted math and English grades. The results of Sideridis's (2005) path analyses indicated that a performance-approach goal orientation had positive effects on math academic achievement for students with LD, and that there were negative effects for avoidance-approach, which was also found in the sample of students without LD. In a second study, Sideridis (2006) concluded that students with LD had lower levels of motivation and achievement than their non-disabled peers, but higher levels of depression and anxiety. Students with LD also had a greater fear of failure (performance avoidance-

approach goal orientation) than their peers, a finding that supported his earlier research.

Studies of expectancy-value motivation. Crombie et al. (2005), Watt (2006), and Watt et al. (2006) also found that math self-competency beliefs/self-perception were a direct strong predictor of math grades. Watt also concluded that when females had a high utility value of math, they were more likely to pursue a career related to math, although males needed only a moderately useful view of the subject to choose a career in which it was needed. In both of the Watt studies, intrinsic value was a predictor of math course enrollment for both sexes. Crombie et al., on the other hand, determined that enrollment intentions for females, but not for males, were linked to competency beliefs; for neither sex did intrinsic value significantly predict enrollment. Simpkins et al. (2006) also found that females had lower math self-concepts than male, but that the number of high school courses was more strongly related to self-concepts than values, and that math beliefs and choices are the same across gender. Nagy et al. (2006) also found gender differences by subject area. Males in their study scored higher in math self-concept and intrinsic value and also enrolled in more advanced math classes; the same pattern was found for females, but in biology. However, when controlling for achievement, intrinsic value, and self-concepts, there were no differences by gender, indicating that these three factors are more important than gender in determining what classes a student might take.

DeBacker and Nelson (1999) also used gender as a factor and reported that intrinsic value and importance (utility) were not significant predictors of achievement for females, but were significantly related to achievement for males. The regression model indicated that values and beliefs each explained a significant and unique amount of variance in male academic performance, but value did not explain any of the variance in

female scores, although beliefs were significant, accounting for 21% of the change in R^2. Steinmayr and Spinath (2009) employed similar variables to understand the relative roles of motivation, intelligence, and prior achievement, concluding that domain-specific self-concepts and value in math and German explained most of the predicted domain-specific achievement variance. Self-concepts explained more additional variance than did task values, but motivation was shown to be at least as important as intelligence within a domain. In support of these findings, Berndt and Miller (1990) also concluded that expectancies for success in math and English, more than task values, were strongly related to domain-specific achievement, but that both were significant. Greene et al. (1999) found that grade level, mathematics class, and gender accounted for only a small amount of variance in achievement, but goals, values, and beliefs each explained statistically significant amounts of variance. Each variable that was a collapsed variable, consisting of multiple smaller variables; for example, goals included both performance and mastery, and beliefs encompassed perception of ability, perceptions of task difficulty, and perceptions of math. In their modified model, Greene et al. also concluded that there was less separateness among the three task values (importance, utility, intrinsic) that created the task-specific values, which was not in keeping with findings presented in other research.

Durik et al. (2006) used English course enrollment, leisurely reading time, and career goals in their analysis and in agreement with the findings of Watt (2006), concluded that self-concept of ability, along with intrinsic value, was a significant predictor of course enrollment, but not career aspirations; both variables also predicted leisurely reading time. The authors also found that girls had higher levels of intrinsic and

importance values of reading than boys. Guthrie et al. (1999) also used multiple reading factors as achievement variables and determined that passage comprehension was not predicted by reading motivation, but that reading amount was, supporting the results obtained by Durik et al.

Summary

Overall, the studies reinforced previous findings that the constructs of expectancy-value motivation are positively correlated with academic achievement outcomes and/or future course enrollment. Specifically, perceived ability/self-concept, utility value, and intrinsic value were the most frequently measured constructs, whereas cost value was evaluated only once. Most studies did not include students with LD and many were conducted only with European American adolescents. Data analysis methods varied, although most were based in regression models and without exception, evaluated at least one motivation variable using Likert scale participant self-ratings. The measurement of independent motivation variables was unreliable or unreported in some studies, and in only instance was the reliability of the academic achievement variable reported. Results from studies of African American students suggest that there are similarities between the relationships of motivation and subsequent academic achievement in European American and African American adolescents but that there may be some other factors, such as social goals, which affect the relationship.

Methodological Findings

This methodological review defines and reports concerns with the validity of the included studies based on criteria used by Test, Fowler, Brewer, and Wood (2005) adapted for non-intervention studies. Definitions of pertinent types of internal, external,

statistical conclusion, and construct validity, modeled on the work of Troia (1999), are in Table 4. The findings are summarized in Table 5.

Table 4. Definitions of Threats to Validity.

Criterion	Definition
Internal Validity Criteria	
Unbiased Selection	Sample is randomly selected and reflects the participants regularly found in the described learning environments. Students have not been purposefully included or excluded. Information about the sampling procedures is provided.
Control for Third Variable	The correlation between the motivation and academic achievement variable cannot be explained by a third, uncontrolled for, variable not represented in the statistical analysis. For the purposes of this review, the variables should include at least gender and prior achievement, as these have been established in the research as influential factors.
Construct Validity	
Adequate Theoretical Framework	The study is situated in a theoretical framework that is explained and justified.
Constructs Defined	Constructs are clearly defined.
Confounding Constructs	Relationships between or among constructs are delineated and explained.
Multiple Measures (Control for Mono-Method Bias)	More than one measure is used to evaluate each variable or construct of interest.
Statistical Conclusion Validity	
Measure Reliability	Reliability coefficients (internal consistency, test-retest, interrater) for the items used in the study are provided.
Number of Participants	The specific number of initial and final participants is provided.
Data Analyses	The form(s) of data analysis are listed, appropriate, and supported.
Operationalized Motivation Measures	Motivation measures were chosen and described in adequate detail to ensure that they evaluated the intended variable(s).
Operationalized Academic Achievement Measures	Academic achievement measures were chosen described in adequate detail to ensure that they evaluated the correct variable(s).

External Validity Criteria	
Grade	The grade level(s) of the participants was provided.
Age	The mean age of the participants was provided.
Gender	The number of male and female participants was provided.
Race/Ethnicity	The race/ethnicity of the participants was provided.
Socio-Economic Status	The socio-economic status of the participants was disclosed.
Disability Inclusion	If students with special education needs were included, their disability information was provided.
Achievement	The measure was standardized.
Location	The physical location (country, urbanization, school district size) of the participants' school was described.
School	The student population, size, function, and grades contained were provided.
Classroom	The type of classroom (inclusion, remedial, self-contained) was explained.
Measure	The measures were explained in enough detail or examples provided to allow for replication of the study using those measures

Note: Definitions based on those created by Troia (1999).

Table 5. Summary of Studies: Methodological.

	Internal Validity		*Construct Validity*					*Statistical Conclusion Validity*			
Study	*Unbiased Selection*	*Control for Third Variable*	*Adequate Theoretical Framework*	*Confounding Constructs*	*Constructs Defined*	*Multiple Measures (Control for Mono-Method Bias)*	*Reliability of Motivation Measures Reported*	*Sufficient Number of Participants*	*Appropriate Data Analysis*	*Operazationalized Motivation Measures*	*Operazationalized Academic Achievement Measures*
						Studies with African American Participants					
Eccles, Wong, & Peck (2006)	L	No PA, G	Yes	Yes	Yes	No M, AC	Yes	Yes	Yes	Yes	Yes
Gutman (2006)	L	No G	Yes	Yes	Yes	No M, AC	Yes	Yes	Yes	Yes	Yes
Gutman & Midgley (2000)	L	No G	Yes	Yes	Yes	No M,AC	Yes	Yes	Yes	Yes	Yes
Jodl, Michael, Maanchuk, Eccles & Sameroff (2001)	L	Yes	Yes	Yes	Yes	No M, AC	Yes	Yes	Yes	Yes	No
Jordan (1981)	Yes	No PA	Yes	Yes	Yes	No M, AC	No	Yes	Yes	Yes	Yes
Kiefer & Ryan (2008)	L	No PA	Yes	Yes	Yes	No M, AC	No	Yes	Yes	No	Yes
Long, Monoi, Harper, Knoblauch, & Murphy (2007)	Yes	No PA	Yes	Yes	Yes	No M, AC	Yes	Yes	Yes	Yes	Yes
Powell & Jacob Arriola (2003)	Yes	No PA	Yes	No	No	No M, AC	Yes	Yes	Yes	No	No
Winston, Eccles, Senior, & Vida (1997)	L	No G	Yes	Yes	Yes	No M	Yes	Yes	Yes	Yes	No
						Studies with Adolescents with Learning Disabilities					
Sideridis (2005)	Yes	No PA, G	No	No	Yes	No M, AC	No	Yes	Yes	No	Yes
Sideridis (2006)	Yes	No PA, G	No	No	No	No M	Yes	Yes	Yes	No	Yes
Deci, Hodges, Pierson, & Tomasson (1992)	Yes	No PA	Yes	Yes	Yes	No M.AC	No	Yes	Yes	Yes	No
Wiest, Wong, Cervantes, Craik, & Kreil (2001)	Yes	No PA, G	Yes	Yes	No	No AC	Yes	Yes	Yes	Yes	Yes

Studies of Expectancy-Value Motivation											
Berndt, & Miller (1990)	Yes	No PA	No	No	No	No M	No	Yes	Yes	No	Yes
Crombie, Sinclair, Silverthorn, Byrne, DuBois, & Trinnier (2005)	L No	Yes	Yes	Yes	Yes	Yes M	Yes	Yes	Yes	Yes	Yes
DeBacker & Nelson, 1999	Yes	No PA	Yes	Yes	Yes	No M, AC	Yes	Yes	Yes	Yes	Yes
Durik, Vida,& Eccles (2006)	L	Yes	Yes	Yes	Yes	No M	Yes	Yes	Yes	Yes	Yes
Greene, DeBacker, Ravindran & Krows (1999)	No	No PA	Yes	No	No	No M, AC	Yes	Yes	Yes	No	No
Guthrie, Wigfield, Metsala, & Cox (1999)	L	No G	Yes	No	Yes	No M	No	Yes	Yes	Yes	Yes
Nagy, Trautwein, Baumert, Koller, & Garrett (2006)	L	Yes	Yes	Yes	Yes	No M, AC	Yes	Yes	Yes	Yes	Yes
Simpkins, Davis-Kean, & Eccles (2006)	L	Yes	Yes	Yes	Yes	No M.AC	Yes	Yes	Yes	Yes	Yes
Steinmayr & Spinath (2009)	Yes	Yes G	Yes	Yes	Yes	No M, AC	Yes	Yes	Yes	Yes	Yes
Watt (2006)	L	Yes	Yes	Yes	No	No M, AC	No	Yes	Yes	Yes	No
Watt, Eccles & Durik (2006)	L	Yes	Yes	Yes	Yes	No M, AC	Yes	Yes	Yes	Yes	Yes
Ratio Meeting Criteria:	**22/24**	**6/24**	**21/24**	**18/24**	**18/24**	**0/24**	**17/24**	**24/24**	**24/24**	**18/24**	**18/24**
Percentage:	***92%***	***25%***	***88%***	***75%***	***75%***	***0%***	***71%***	***100%***	***100%***	***75%***	***75%***

	External Validity									
	Participants							*Setting*		*Measures*
Study	*Grade*	*Age*	*Gender*	*Race*	*SES*	*Disability*	*Achievement*	*Location*	*School*	*Classroom*	*Measures*
Studies with African American Participants											
Eccles, Wong, & Peck (2006)	Yes	No	Yes	AA	Yes	No	Yes	Yes	No	No	Yes
Gutman (2006)	Yes	No	Yes	AA	Yes	No	Yes	Yes	Yes	No	No
Gutman & Midgley (2000)	Yes	No	Yes	AA	Yes	No	Yes	Yes	Yes	No	Yes
Jodl, Michael, Malanchuk, Eccles & Sameroff (2001)	Yes	No	Yes	AW	Yes	No	No	Yes	No	No	Yes
Jordan (1981)	Yes	No	Yes	AA	Yes	No	Yes	Yes	Yes	No	Yes
Kiefer & Ryan (2008)	Yes	No	Yes	AW	Yes	No	No	Yes	Yes	No	Yes

Long, Monoi, Harper, Knoblauch, & Murphy (2007)	Yes	No	Yes	AA	Yes	No	No	Yes	No	No	Yes
Powell & Jacob Arriola (2003)	Yes	Yes	Yes	AA	No	No	No	No	Yes	No	Yes
Winston, Eccles, Senior, & Vida (1997)	Yes	No	Yes	AW	Yes	No	No	Yes	No	No	Yes
Studies with Participants with Learning Disabilities											
Deci, Hodges,Pierson, & Tomassone (1992)	Yes	Yes	Yes	PW	Yes	Yes	Yes	Yes	Yes	No	Yes
Sideridis (2005)	Yes	No	Yes	PW*	No	Yes	Yes	No	No	No	Yes
Sideridis (2006)	Yes	Yes	Yes	PW*	Yes	Yes	Yes	No	No	No	Yes
Wiest, Wong, Cervantes, Craik, & Kreil (2001)	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Studies of Expectancy-Value Motivation											
Berndt & Miller (1990)	Yes	Yes	Yes	PW	Yes	No	No	No	No	No	Yes
Crombie, Sinclair, Silverthorn, Byrne, DuBois, & Trinnier (2005)	Yes	No	Yes	PW*	Yes	No	Yes	Yes	No	No	Yes
DeBacker & Nelson, 1999	Yes	No	Yes	No	No	No	Yes	No	No	No	No
Durik, Vida, & Eccles (2006)	Yes	No	Yes	PW	Yes	No	Yes	Yes	Yes	No	Yes
Greene, DeBacker, Ravindran, & Krows (1999)	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Guthrie, Wigfield, Metsala, & Cox (1999)	Yes	No	No	No	Yes	No	Yes	No	No	No	No
Nagy, Trautwein, Baumert, Koller, & Garrett (2006)	Yes	No	Yes	N*	No	No	Yes	Yes	Yes	No	Yes
Simpkins, Davis-Kean, & Eccles (2006)	Yes	Yes	Yes	PW	Yes	No	Yes	Yes	No	No	Yes
Steinmayr & Spinath (2009)	Yes	Yes	Yes	PW*	Yes	No	Yes	Yes	Yes	No	Yes
	Yes	No	Yes	Yes*	Yes	No	Yes	Yes	No	No	No

Watt (2006)											
Watt, Eccles, & Durik (2006)	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes
Ratio Meeting Criteria:	**24/24**	**5/24**	**23/24**	**21/24**	**19/24**	**4/24**	**17/24**	**18/24**	**11/24**	**0/24**	**20/24**
Percentage:	*100%*	*21%*	*96%*	*88%*	*79%*	*16%*	*71%*	*75%*	*48%*	*0%*	*84%*

Note. "Yes" indicates that the study met the criteria; "no" indicates that it did not; criteria are defined in Table 3. AC = only one measure of academic achievement; AA = exclusively African American or Black sample; AW = 50% African American/Black sample and 50% European American sample; G = did not control for gender; L = longitudinal study; M = only one measure of motivation; PA = did not control for prior achievement; PW = predominantly European American sample; * = study took place in a country other than the United States

Construct Validity

As voiced by Dweck and Elliot (2005, p. 4), in their introduction to the *Handbook of Competence and Motivation*, "Any given empirical investigation may provide specific construct definitions and matching operationalizations, but these definitions and operationalizations are likely to vary considerably across investigators and investigations." This is an important overall limitation with achievement motivation literature, although defining theoretical frameworks and constructs was adequately accomplished, with studies meeting the criteria outlined in Table 5 88% and 75% of the time, respectively. Strong position examples included Crombie et al.'s (2005) work, which had well-outlined and theoretically-supported constructs; the authors presented their definitions of adolescent, competence beliefs, task values, and gender differences in a way that fed a clear understanding of their hypothesized model, analyses and results. Deci et al. (1992) established a framework around the concept of learning and emotional disabilities. Many studies (Durik et al., 2006; Eccles et al., 2006; Jodl et al., 2001; Nagy et al., 2006; Sideridis, 2006; Steinmayr and Spinath, 2009; Watt, 2006; Wiest et al., 2001; Winston, et al., 1997) used expectancy-value or other established motivation theories, and therefore had only to explain how the hypotheses fit with framework. DeBacker and Nelson's (1999) literature review was more than adequate, establishing not only the concepts of expectancy-value theory, but extending their theory and framework in logical progression to include goal theory, perceived instrumentality, perceived difficulty, gender, and teacher-influence. Greene et al. (1999) followed a similar vein as DeBacker and Nelson, creating a model that encompassed gender and the larger, more general variables of goals, beliefs, and values. Long et al. (2007) also began their study with a

theoretically sound review that clarified the differences between constructs relevant to the analyses, then tied together the three motivation variables within the larger framework of achievement in African American adolescents. The solid foundation allowed for a precise operalization of the constructs and a clear understanding of the methods.

Other studies did not include adequately operationalized definitions and/or theoretical support. Sideridis (2005) never defined three of his constructs- attitudes, normative beliefs, intention- nor justified how they fit into the two motivation frameworks he described. Additionally, the author pulled his ten-item scale from four sources and did not provide a rationale for these choices. Some author-created items on the questionnaire had low internal consistency, with alphas of .54 and .59 for two items that represented the construct normative beliefs. The medley of items from such a variety of sources, mixed with low internal consistency and constructs measured by only two items does not support the author's claim that the results are reliable. Powell and Jacob Arriola (2003) suggested that they would be couching their study within the framework of underachievement among urban black youth and stereotype threat, but their motivation model concerned noncognitive indicators and the measures evaluated altruism, goals, social supports, and response to unfair treatment. The unclear relationships among the multiple frameworks and constructs from unexplained theories weakened the study and may have contributed to the absence of an observed relationship between motivation and GPA.

Mono-method bias for the motivation variable was present in all 24 studies, as each used or created Likert scales self-reports that evaluated a single construct. In motivation research, it is uncommon for a study to supply more than one measure of a

construct, as there are limitations as to how many ways a question about ability or task value can be phrased, and another measure might be redundant.

Academic achievement variables were also often evaluated with only one measure, whether classroom grades (DeBacker and Nelson, 1999; Greene et al., 1999), GPA (see Table 3), passage comprehension items (Guthrie et al., 1999), or a standardized assessment (Deci et al., 1992). In only one study did the researchers clarify that the GPA was based on a standardized weighted method used by all of the teachers whose class grades were used (Jordan, 1981); in all of the other studies using GPA, there were no explanations as to how it was calculated. In some cases, students were asked their grades, rather than using student records, and this may also have lead to inaccuracies. Additionally, if the only outcome variable was career aspirations or future enrollment, there is no reliability or validity for an adolescent's prediction or aspiration. In eight studies (33%), researchers attempted to evaluate multiple academic achievement measures, and this helped to improve construct validity. Watt (2006) evaluated future math course enrollment as well as career aspirations. Crombie et al. (2005)and Winston et al. (1997) used math grades as well as intentions to enroll in future math courses as academic achievement variables; Durik et al. (2006) employed career aspirations, leisurely reading activities, and course enrollment to measure English-specific outcomes, and Sideridis (2006) used three measures to evaluate math achievement. Steinmayr and Spinnath (2009) used both German and math grades. In a particularly strong example, Berndt and Miller (1990) collected students' track placement as well as grades in both English and math, and then combined the latter two and removed the former once analyses indicated that the results would be redundant if the factors were kept separate.

Simpkins et al. (2006) effectively used their longitudinal dataset, and followed their students through 12th grade, thereby not predicting their high school math and science course choices, but instead correlating their actual enrollment with self-concepts and task values from previous years. The authors also correlated grades from two earlier points in the students' schooling with the course selections. These studies strengthened their findings by providing multiple measures that evaluated the relationship between motivation constructs and academic achievement.

Internal Validity

Selection bias. In two studies (8%), researchers purposefully limited their sample, in one instance to include solely students with special education needs in separate academic settings, and in one case to exclude these students from the study. In these instances, selection bias weakened internal validity (as well as the external validity; see below). The authors' measures, data analyses, and results are subject to scrutiny; other researchers cannot determine if the findings are accurate, because the measured sample is nested within a more diverse population. For example, Crombie et al. (2005) chose to exclude students with special education needs, which the researchers rationalized by stating that those students had low reading levels. The results are in question because the remaining sampled participants may exhibit certain characteristics (similar reading levels, for example) that may have influenced how they responded to the questionnaires or their levels of academic achievement. Wiest et al. (2001), conversely, only included students with special needs in their study, leaving open the question of how results on a selected sample relate to a broader group of students. Authors chose not to investigate or to report if students with special education needs were included in their studies and then were

unable to to report their findings by disability status- even stating that all of the students did not have LD or other impactful differences. These researchers inadvertently compromised their results because it cannot be ascertained if the same results would be attained if students with special education needs were included. In either instance, the participants may have possessed behaviors or attitudes that could have influenced the findings.

Control for third variable. A concern in any study is the control of any additional factor that may exert an influence on the observed relationships. Studies varied in their control of these potentially influential extraneous variables on the relationships between motivation and academic achievement. Researchers attempted to control for at least one factor that has been shown to influence correlations, including gender (Durik et al., 2006; Greene et al., 1999; Nagy et al., 2006; Watt, 2006; Watt et al., 2006), SES (Eccles et al., 2006; Guthrie et al., 1999; Gutman, 2006; Gutman & Midgley, 2000; Jodl et al., 2001), and/or prior achievement (Crombie et al., 2005; Durik et al.; Guthrie et al.; Gutman; Gutman & Midgley; Jodl et al., 2001; Nagy et al., 2006; Steinmayr & Spinnath, 2009; Watt; Watt et al.; Winston et al., 1997). Only one study, Simpkins et al., 2006, accounted for all three variables; the authors specifically measured SES by both parent education and income. In both of the studies by Sideridis, authors did not control for any additional influences that may account for the relationship between motivation and academic achievement. DeBacker and Nelson (1999) controlled particularly well for gender and multiple motivation theories and constructs in their analyses by included other factors such as teachers, effort, and perceived difficulty of tasks. Only Deci et al. (1992) accounted for gender, disability, classroom context, home context, in addition to the

multiple motivation constructs. Berndt and Miller (1990) used multiple motivation constructs but did not consider factors such as gender, peers, or classroom environments in their analyses.

Statistical Conclusion Validity

Measuring motivation. Although multiple measures should increase the validity of the study (www.socialresearchmethods.net.kb), this does not hold true if the measures are not reliable. Seventy-one percent of the studies in this review reported adequate and appropriate reliability information for their independent variable measures. For example, Steinmayr and Spinath (2009) combined established and/or published measures with author-created ones from previous studies, all of which have reported reliability, to measure motivation; their methods section reflects a purposeful attention to confirming reliability. Sideridis (2006) also followed this path, using subscales of published depression, anxiety, and fear of failure tests in combination with an author-created scale for ought-self behaviors. Sideridis provided internal consistency alphas for the author-created measure; these coefficients ranged between .73 and .85.

Establishing or reporting internal consistency (Cronbach's alpha) was the predominant method of confirming measure reliability; all of the studies in Table 3 that meet the standard for reliability reported an alpha coefficient. Crombie et al. (2005) also provided test-retest reliability data for many of their motivation variables. A concern for the studies that used SEM is the growing consensus that Cronbach's alpha is not the most appropriate or accurate method for evaluating the reliability of factors, variables, or constructs that the SEM model or path diagram represent (Mueller & Hancock, 2010). However, the coefficients do provide information about the consistency of the items, if

not the factor.

In the remaining seven studies (28%), researchers failed to support the reliability of their measures. For example, Watt (2006) used items modified for a prior study with the same participants, and referenced that study for the measures' reliability coefficients but did not report them. Berndt & Miller (1990) changed the purpose of the measures they borrowed from previous studies by modifying one measure's questions (asking adolescents about their perceptions of themselves rather than their perceptions of their classmates) and revised a school utility value, importance, and interest measure from domain-specific to schoolwork general responses. This latter revision is of particular concern when considering that task values has been shown to be a domain-specific. Although the authors reported internal consistency coefficient alpha estimates for each measure (.38- 84) and cautioned about the low reliability of a particular group of items, it was unclear in either the table or the method section whether the reliability coefficients were for the modified test items or the original ones. Similarly, when Sideridis (2005) reported reliability coefficients for a goal orientation scale, the author explained that the items were taken from reliable measures, but did not clarify whether it was the items themselves that were reliable or if the overall test had reliability. This is a concern because a large assessment can have high reliability, but the items alone may not be reliable.

Measuring academic achievement. The measurement and operationalization of academic achievement outcomes was neither adequate in most studies nor consistent between studies. GPA and subject-specific grades were used most frequently as a measure of academic achievement, but none of the studies were able to provide an

explanation of why these measures were a reliable or valid evaluation of student academic performance. Career aspirations and future course enrollment were adequate indicators of long-term intentions and correlated with task values, although none of the studies provided follow-up data about the actual college enrollment or career choices of the participants. In the instance where motivation was measured in an early grade and course enrollment was verified by questionnaires conducted years later, (Greene et al., 1999), that variable may have been an adequate measure, but the reliability was not measured. Reliability of standardized test scores was not provided in two of the three instances in which these types of assessment were used (Deci et al., 1992; Nagy et al., 2006). In the study by Nagy et al., the standardized test was developed by an international association and used to evaluate students in many countries, but no reliability of this assessment was provided.

External Validity

Participants. Six studies included only or mostly African American adolescents (Eccles et al., 2006; Gutman, 2006; Gutman & Midgley, 2000; Long et al., 2007; Jordan, 1981; Powell & Jacob Arriola, 2003), and three others (Jodl et al., 2001; Kiefer & Ryan, 2008; Winston et al., 1997) had approximately a 50/50 split between African American and European American students to make comparisons between groups that were match on other variables (income, schools attended, parent education, etc.); in all but three of these studies, expectancy value constructs were not used. Only four studies in this literature review included students with special education needs (16%), and none of these used expectancy value constructs. The participants of expectancy-value theory studies were an approximately even number of males and females who were usually European

American students (63%) without learning or emotional disabilities (100%).

In all cases, researchers provided the grade levels for the students in the sample; however, in only five studies (21%) did the authors indicate the mean age of the participants. This may have been due in part to the use of longitudinal databases in 13 instances, but this is a concern when considering, as indicated below, that nearly half of the studies that used expectancy value constructs did not take place in the United States. As grade levels may not translate as well as mean age when comparing researchers' findings, it does hamper generalizations that can be made across studies.

SES was reported for the majority of studies (79%), although not all of them used the information in their analyses. The majority of these studies had students in middle class to upper middle class homes. Two of the studies that purposefully sampled African American adolescents had students in low income households.

In the majority of studies (79%), the achievement variable was recorded in a manner clear enough to lend itself to replication. Although GPA could be argued to reflect unmeasured constructs such as teacher bias, student effort, or school policy, GPA could be used in other studies to compare mean changes in levels of student achievement observed in this literature review.

Setting. A number of studies took place outside of the United States (25%). Full descriptions of school location, size, population, diversity, or content area of instruction were rarely provided. Only one study (4%; Wiest et al., 2001) mentioned that some or all of the participants were in classrooms for students with special education learning needs. Again, only one study investigated the relationship between how classroom or building location or peer interaction (with or without other students with LD) does or does not

change self-efficacy, expectancies for success, or task values (Deci et al., 1992). It is not possible to generalize the findings from any study in this review, with the exception of Wiest et al., to a population anywhere other than a general education setting without students with special education needs.

Measures. The measures used in these studies are for the most part described in adequate detail and accompanied by reliability coefficients that support the use of similar measures in replication studies; 84% of the studies met the criteria. In the majority of the studies conducting in the United States, the authors created their own measures or borrowed portions of previously tested instruments and in some cases, used published assessments. Researchers could employ those measures, in part or in whole, in new studies with the information provided in most of the studies.

Summary

Overall, the major methodological concerns with these studies are: reliability of independent and dependent measures, control of potentially influential variables such as SES, gender, prior achievement, and age, mono-method bias, homogenous samples, and inadequate descriptions of schools and classrooms.

Summary

Of the 24 studies included in this review, three (Durik et al., 2006; Simpkins et al., 2006; Steinmayr & Spinath, 2009) met or exceeded 80% or more of the total criteria for internal, construct, statistical conclusion, and/or external validity combined. An additional ten studies (Crombie et al., 2005; Deci et al., 1992; Eccles et al., 2006; Gutman, 2006; Gutman & Midgley, 2000; Jordan, 1981; Nagy et al., 2006; Watt et al., 2006; Wiest et al., 2001; Winston, 1997) met at least 70% of the criteria. Only six studies

met both of the criteria for internal validity; most analyses did not consider important and potentially influential variables such as SES, gender, or prior achievement. Setting aside mono-method bias for motivation measures, only two studies met the four criteria for construct validity. This is not surprising in light of the ongoing concerns in motivation research about establishing both theoretical and empirical support for the creation or separation of constructs. Twelve studies met all of the criteria for statistical conclusion validity, which is an overall strength of these studies. None of the studies met all 11 criteria for external validity, although Deci et al. (1992) met 10. Half of the studies in this review met less than 70% of the overall criteria.

The strength of the statistical conclusion validity suggests that many researchers reported adequate reliability of their motivation measures, had sufficient numbers of participants, used appropriate data analyses and were able to operazationalize the motivation and academic achievement variables. Although drawing conclusions about diverse student populations or how expectancy value motivation may influence performance on standardized assessments is not possible, given the constraints in validity, these studies do support the role of gender in motivation and the influence motivation exerts on future course selection in the areas of math and science. The studies in this review encompass what researchers know about adolescents' expectancy value motivation for academic achievement tasks, motivation and adolescents with LD, and motivation for academic outcomes in African American students.

Conclusion and Purpose

Few researchers have explored the motivation of African American students outside of transitions (Gutman 2006; Gutman & Midgley, 2000; Long et al., 2007;

Winston et al, 1997), and even fewer have examined motivation in adolescents with special education needs in general education settings (Deci et al., 1992, Sideris, 2005, 2006). None have analyzed how the constructs of the expectancy value theory of motivation might influence the performance of an African American student with LD on reading assessment. To construct more accurate models of adolescent subjective task values and expectancies for success, studies must be inclusive of a diversity of learners, not only in ethnicity, gender, and race, but also in special education needs (most specifically with reading difficulties) and use measures that reflect the academic expectations of adolescent learners.

The relationship between expectancy value motivation and African American adolescents is an under-researched field; the same can be argued for expectancy value and students with special education needs. These middle and high school students are not the subjects of the vast body of research as are their classmates in elementary schools without learning differences. This paucity of quality research, paired with the known increase in academic, social, and emotional challenges faced by today's youth, especially at times of transition, indicates that more attention must be paid to students as they move through adolescence. In order for the relationships between expectancy-value motivation and adolescent academic achievement to be meaningfully delineated, analyzed, and discussed in a way that benefits researchers, teachers, and students, studies must provide clear theoretical frameworks and definitions of motivation construct, use a reliable and valid measures, include ethnically, racially, and ability diverse learners and use a standardized variable other than GPA as an outcome. Future studies must also control for prior achievement, SES, and gender, all of which have been shown to influence both

motivation and academic outcomes. This could best be accomplished, as was attempted in several studies, by using reliable motivation and academic achievement measures. Therefore, I proposed to explore the following questions:

1. What is the factor structure of major constructs in expectancy-value theory of motivation (ability beliefs, expectancies for success, and importance, intrinsic, and cost task values in reading/English) in African American adolescents?

2. What is the relationship between perceived reading/English ability, expectancies for success, cost, intrinsic, and importance task values for reading/English, and performance on a reading assessment for a sample of African American adolescents? Does the presence of an IEP with a reading goal add to the relationship?

3. What is the relationship between perceived reading/English ability, expectancy-value motivation constructs (listed above) and future course enrollment for African American adolescents? Does the presence of an IEP with a reading goal add to the relationship?

Chapter III

METHOD

Overview

The purpose of this study was twofold: (a) to explore the relationships among perceived reading ability, expectancies for success, task values, and performance on a reading assessment for African American adolescents with and without reading disabilities, and (b) to explore the influence of these factors on future course enrollment. The research questions and hypotheses that guided this study were:

1. What is the factor structure of major constructs in expectancy-value theory of motivation (ability beliefs, expectancies for success, and importance, intrinsic, and cost task values in reading/English) in African American adolescents?

I hypothesize that perceived ability and expectancies for success will collapse into one factor, but that the other motivation constructs will remain unique in the analysis (Greene et al., 1999). Cost will remain unique because it concerns time and effort (Baker & Wigfield, 2003; Eccles & Wigfield, nd), whereas the other motivation constructs do not address either of these. Intrinsic value has consistently been a unique factor (Crombie et al., 2005; DeBacker & Nelson, 1999), and importance value has also been shown to combine utility and attainment as a unique factor (DeBacker & Nelson; Durik et al., 2006). The indicator variables will load onto the motivation factors in the same patterns as they have for European American adolescents, as suggested by Graham (1994).

2. What is the relationship between perceived reading/English ability,

expectancies for success, cost, intrinsic, and importance task values for reading/English, and performance on a reading assessment for a sample of African American adolescents? Does the presence of an IEP with a reading goal add to the relationship?

I hypothesize that perceived ability and expectancies for success, as a combined latent factor, will be positively and significantly related to scores on the reading assessment (Winston et al., 1997), as will cost and importance value factors (Berndt & Miller, 1990; DeBacker & Nelson, 1999). Intrinsic value will not be significant (Crombie et al., 2005). The indicator variables of SES, gender, and prior achievement will not be significant for this sample. Although gender has been shown to be significant for enrollment intentions, the same is not true for academic achievement, especially when considering motivation as well (Greene et al., 1999). Also, it is suggested that African American students have lower GPA's and higher expectancies for success and perceived abilities than their European American peers (Graham, 1994), and therefore this disconnect between prior achievement (English GPA) and actual performance will minimize its predictive value on a reading assessment for this sample of students. I believe that the protective factors cited by Graham may not be relevant for adolescents in schools with a majority of self-identified Black/African American students. Lastly, I predict that SES will not be significant because of limited variance in the sample. When the IEP reading goal variable is added, I hypothesize that the expectancies for success/perceived ability latent factor will continue to be positively and significantly related to scores on the reading assessment, as will cost and importance value latent factors. The intrinsic value factor will not be significant. The indicator variables of SES, gender, race, and prior achievement will not be significant for this sample. The new

factor, the presence of a reading goal in a student's IEP, will not be significant, but will change the values of the paths between the motivation factors and the reading achievement variable. Although there are no studies that used IEP reading goal status in their analysis of expectancy-value constructs, Sideridis (2006) found that students with learning disabilities had both lower motivation and academic achievement than their peers; therefore the addition of the variable will be redundant. Additionally, because these students often overestimate their abilities, the values of the pathways from perceived ability variable and expectancies for success to academic achievement will decrease or become non- significant.

3. What is the relationship between perceived reading/English ability, expectancy-value motivation constructs (listed above) and future course enrollment for African American adolescents? Does the presence of an IEP with a reading goal add to the relationship?

I hypothesize that the expectancies for success/perceived ability latent factor and the intrinsic value latent factor will be positively and significantly related to scores on enrollment intentions. Neither the cost value factor, importance value factor, nor the presence of a reading goal will be significant (Watt, 2006). Gender has repeatedly been shown to influence future course enrollment for European American students, (Crombie et al., 2005; Durik et al., 2006; Jodl et al. 2001; Nagy et al., 2006), and I believe this will hold true for African American students as well. Neither SES nor prior achievement will be a significant factor, the former for reasons outlined in research question two, and the latter in reflection of findings from Durik et al., who found that prior English achievement did not influence enrollment outcomes.

To answer these research questions, I collected and analyzed data from students about task values, expectancies for success, perceived reading ability, and academic achievement in reading while controlling for learner status (the presence of a reading goal on an IEP), SES, and gender. An assessment of reading ability, a motivation survey, and demographic forms were administered to the students. Parents also completed demographic surveys. In this chapter, I outline (a) the settings and participants, (b) recruitment of schools, teachers, and students, (c) data collection procedures, (d) control, independent, and dependent variables, and (e) design and data analysis.

Setting and Participants

Setting

City

Data collection took place in a mid-sized city in a mid-Atlantic state with a population of approximately 630,000 people. The city is comprised primarily of people who identify as African, African American or Black (63.6%) and European American/Caucasian (32.7%). The remaining members of the population identify as bi-racial (1.3%) or Asian (2.0%). Approximately 2.7% of the population identifies as ethnically Hispanic. The median income in the city is $40,087, about one-third less than the reported median income in the surrounding county ($63, 078), and about 40% less than the state ($70, 482). Approximately 19.2% of people live in poverty, compared with 8.2% in the state (data source blinded for confidentiality).

Public school population. In 2009-2010, the most recent year for which data were available, 82,866 students attended the public schools; 27,007 of those attended high schools. The student population does not reflect the city's demographics, with 88% of the

schools' students identifying as African, African- American, or Black and 7.8% as European American/Caucasian. Approximately 3% of children ethnically identify as Hispanic/Latino. Estimates from a 2009 report released by the school system (blinded for confidentiality/Student_Performance/PDF/EnrollmentProjection Considerations.pdf) indicate that only about 60% of the school-age students who live within the city limits attended the public schools at the time that this study was conducted. In the fall of 2009, approximately 71.5% of the high school students qualified for Free and Reduced Meals (FARM), an indicator of low income status; in the elementary and middle schools, these percentages were higher, at 85% and 83.5% respectively. Using the Leaver Method (defined in Chapter 1), 65.9% of the seniors graduated in 2010; using the 5-year cohort method (also defined in Chapter 1), this percent is slightly lower, at 64.67%. Students with special education needs graduated at a much lower rate, with 42.2% and 41.06% graduate rates using the Leaver and 5-year cohort methods respectively (Website blinded for confidentiality). Private institutions estimate that as many as 41.5% of all high school students in this city do not graduate (http://www.americaspromise.org/~/Blinded for Confidentiality).

Participating high schools. Study participants attended five high schools in this city. These schools were either those with which the researcher had a professional relationship with a member or members the school faculty or ones suggested by the research division in the public school system's department charged with approving research studies. Relevant statistics for these schools are listed in Table 6.

Table 6. *Summary of School and Student Demographics*

	School #1	School #2	School #3	School #4	School #5	City Public High Schools	State Public High Schools
Type of School	Neighborhood	Charter/Lottery	Charter/Lottery	Neighborhood	Neighborhood		
School Population (2010)	823	335	206	948	717	27007	266,627
Gender (% Male)	52.7%	41.1%	49.5% *	55.9%	56.1%	**	**
Race (% African-American)	97.8%	99%	85.1%*	96.7%	99%	**	**
% participation in Free and Reduced Meals Program (2010)	79%	67.2%	80.1%	74.8%	74.1%	71.5%	32.4%
% of students receiving special education services (2010)	21.8%	13.5%	18.4%	19.4%	24.1%	16.6%	10.7%
% of students receiving special education services as a student with a reading goal included in study (Fall, 2011)	8.2%	8.0%	4.8%	9.0%	0.0%	N/A	N/A
% of students passing the state 10th grade end-of-course exam in English (Spring, 2010)	22.2%	25%	51.4%	35.8%	27%	52%	77.5%

*Information provided is based on 6-12 school model; **Information for high schools not available

Two of the five schools were charter schools with a lottery admission, a process which requires volunteer application to a high school "of choice"; these high schools accept students regardless of their home zip code, GPA, or the middle school they attended. One school was part of the small school initiative begun in 2002 with an influx of funds under a Gates Foundation education initiative and has since converted to a charter school with lottery admission, and focuses on a mission of social justice in the local community. Approximately 99% of the students in this high school identify as African-American. The other is a college preparatory school of choice guided by a national model for urban high schools; it also enrolls students through the lottery admission system. Eighty-five percent of the students in this school identify as African American.

The remaining three schools are what the school system refers to as 'neighborhood schools' and serve students who live in the immediate vicinity as well as any who might have changed schools for disciplinary infractions or courses offered at only that location. The range of household income for these three schools' zip codes is between $26,801 and $41,375 and the population in each is predominantly although not exclusively African/African American/Black (88.5%, 80.9%, and 80% respectively). The schools have African American populations of 97.8%, 96.7%, and 99% respectively; the schools' student populations are therefore not representative of the surrounding communities although 'neighborhood' would suggest that they are. The population of African/African American/Black students in the school system is 87.83%, indicating these schools serve more non-European American students than others the school system. However, adolescents in these high schools reflect the school system's high school

population in terms of FARM status (SES), gender, and students receiving special education services, but have on average lower state accountability test scores. It was my intention to recruit a sample of students that reflected the *schools'* student demographics, not that of the city or neighborhoods surrounding the schools.

Participants with special education needs. Special education services are provided for 16.6% of high school students (grades 9-12) served by the public school system in which this study took place. In each of the participating five schools, approximately 21.8% (School 1), 13.5% (School 2), 18.4% (School 3), 19.4% (School 4), and 24.1% (School 5; overall M = 19.44%) of students have a disability documented through an IEP (source blinded for confidentiality). Although there are no means of determining the percentage of students receiving services for each type of disability, it was possible, after receiving teacher reports, to identify the percent of students in the sample receiving IEP services who had reading goals. At one school, none of the students who turned in permission slips had documented reading goals; at the remaining schools, between 5.8% and 9.0% of the sample had an IEP with a reading goal.

Sample

The aim of this study was to examine if perceived reading ability, task values, expectancies for success, demographic variables (gender, SES), prior achievement, and learner status influenced performance on a test of reading comprehension for adolescent African American students. Therefore, the sample included male and female students with and without documented IEPs with reading goals. To access this population, 9th and 10th grade students and their parents in three urban public high schools and two charter schools were contacted. The target sample for this study was purposefully chosen so that

African American adolescents and students with IEP goals in reading in inclusion settings could be included. Using enrollment figures from fall 2010, a 50% consent and assent rate would have provided a sample of approximately 450 students.

Recruitment and Student Selection

Recruitment and Permission

For research to be conducted in this city's public school system, research division must be contacted directly and relevant and requested documents must be completed and submitted. A principal can attach letters in support of the study if s/h has been contacted prior to the submission of the request, which occurred in one instance. Parent consent and student assent documents approved by the University of Maryland Internal Review Board (IRB) and subsequently the research division can be found in Appendices D and E.

To ensure that principals would be adequately informed of the research proposal and given ample opportunity to discuss the study with the investigator, principals were contacted and met with the investigator through the spring, summer and early fall of 2010 leading up to the data collection. To encourage participation, incentives for the school, school system, students, and teachers were outlined. These incentives, which were based in part on the principal's decision to partake of each, could include: information about 9th and 10th grade reading performance; survey information about student motivation; professional development for teachers concerning the findings; teacher exposure to easy-to-administer, time-friendly reading assessments; professional development for English teachers on using assessments for progress monitoring or post-testing purposes. One principal provided formal written permission, three principals provided written email permission, and one provided oral permission which was confirmed through the

researcher's email.

Teacher participation was determined by each principal's policies. Once principals agreed that teachers could participate, teachers were also informed of the incentives relevant to their classroom instruction (professional development) and were also informed of a small compensation (breakfast provided for participating teachers) for the loan of their classroom instruction time.

Student and parent incentives were used to encourage participation in the study. There was a raffle for one (1) $100 Best Buy gift card for all participants and five (5) $25.00 ITunes gift cards which were awarded to one student in each school. Winning students' names were discarded and another drawing held if the student transferred to another school. Additionally, the English class that had the overall highest percent of permission slips returned, regardless of participation decision, won a breakfast buffet during the week following data collection. Parents were also encouraged to return permission slips; one parent from each school received a $50.00 grocery gift card. Students received permission slips in their English I (9^{th} grade) and English II (10^{th} grade) classes 7 school days in advance of data collection. Follow-up to increase participation included oral reminders from the English teachers as they collected permission slips daily, oral reminders by the investigator during visits to collect documents, and visual reminders posted in the front of the English classrooms.

Student Selection

Seven-hundred and fifty-six 9^{th} and 10^{th} graders at the five high schools received packets containing an introductory letter, parent consent form (the University of Maryland IRB form), and parent demographic form. An additional 5 packets were left

with each teacher to distribute to students who were absent; I did not record how many of those additional packets were distributed and no additional forms were requested. Two-hundred forty-nine (32.9%) forms were returned with an affirmative response to participation; 237 of those respondents (31.3%) were present on the days the reading, motivation, and student demographic tests were administered. One student withdrew herself from the study. Students who returned parent consent forms were asked to sign their assent to participate in the study. This document was read aloud and signed when the students were taken from their classrooms to complete the assessment and questionnaires to ensure ongoing voluntary involvement in the study. Students with an IEP in areas other than reading, a 504 plan, or other academic placement considerations (honors, regular tracking) were included because the purpose of the study was to evaluate how motivation and reading ability predict academic performance of all adolescents in inclusion settings. Since all participants were enrolled in general education classrooms, they were following a city or state wide curriculum focused on graduation standards and therefore expected to meet the same academic demands. Teacher report was used to determine IEP status, and parents provided SES by completing questions about the number of people in their home and their income (see Appendix C).

Procedures

Timeline

Table 7 summarizes important steps in the study.

Table 7. *Anticipated Timeline for Study Completion.*

Task	Estimated Completion Date
High Schools Principals Contacted	*April 2010*
Proposal Presented to Dissertation Committee	*May 2010*
Proposal submitted to Internal Review Board	*June 2010*
Submit Documentation to -------- City Division of Research, Evaluation, Assessment, and Accountability(DREAA)	*July 2010*
Permission Slips Distributed	*September-November 2010*
Research Conducted	*September-December 2010*
Data Analyzed, Results Recorded	*Fall 2010/Winter 2011*
Results Presented to Dissertation Committee and shared with City Division of Research, Evaluation, Assessment and Accountability Office	*April - May 2011*

Test Administration and Procedures

On the designated school day, students who had permission from their parent(s) completed the Student Assent document, the Test of Silent Reading Efficiency and Comprehension (TOSREC; Wagner, et al., 2010), the motivation questionnaire, and a demographic information sheet, in that order. For the session, which lasted approximately 30-40 minutes, or 1/3 to 1/2 of a regularly scheduled English class period, students were taken to a nearby classroom in groups of up to 10 students. First, the assent form was read out loud and students decided whether or not to continue to participate. The directions for the reading assessment, the TOSREC, were read as per standardized group administration. Directions, prompts, and response choices for the motivation survey as well as demographic questionnaire were read out loud to all students. To encourage maximum participation and a formal test-taking atmosphere, the investigator was present the entire time. For reasons related to the validity and reliability of the TOSREC, students

completed the reading assessment without adult assistance beyond the verbatim reading of standardized directions.

The students were told, before completing the TOSREC, that the test would provide the investigator with information about their reading abilities. Before the participants took the motivation survey, the investigator read the following statement: "The survey that you are about to take is going to ask you about your reading skills. It is going to ask you about how well you think that you can do on a reading test, how much you like and use reading, if reading is important to you, if reading is worth the effort, and if you think that you will need reading in the future. Please answer each question carefully." After the reading assessment and the motivation survey, students completed a demographic information form that requested date of birth, gender, race, ethnicity, mother's and father's levels of education, and the previous year's English grade. After completing these three tasks, the latter two of which were read out loud verbatim, the students were thanked for their participation and for contributing to what can be learned about teenagers and their motivation for English and reading.

Data were collected from September through November of 2010 and analyzed during the winter of 2011. Results were shared after the oral defense of this study, with DREAA, principals, and teachers at each of the participating high schools.

Confidentiality

Confidentiality of the students' records, surveys, and assessment was ensured through the assignment of identification numbers. All original documents as well as copies of information from student files (in some cases, teachers provided documents concerning IEP reading goal status) were kept in a locked file cabinet in a locked closet

in my home. The key listing identifying participant name and the corresponding identification number was kept separately from the participant materials. The electronic copy was password protected. Student permission forms were locked in a different location. All physical student files were de-identified when a key was created and the identification numbers recorded on all papers. Before analysis began, I ensured that there is no way to connect student information with the identification numbers aside from the key. Only I had access to the locked location.

Variables and Measurement

Independent Variables

Tables 8 and 9 provide reliability and validity for groups of items (indicator variables) listed in the motivation survey used in the studies included in Chapter 2. The reliability, validity, and metric of the independent, dependent and control variables are discussed below for each. Reliability and validity of the latent factors used in the study, which differed from the proposed latent factors, are provided in Chapter 4.

Table 8. *Summary of Reliability for Previous Expectancy-Value Motivation Studies.*

Study and Items	Scale	Population	Coefficient	Reliability Type
Battle & Wigfield (2003)	5-point Likert scale			
Cost Value		undergraduate females	$\alpha = .85$	Internal Consistency
Crombie et al. (2005)	7-point Likert scale			
Math Usefulness Value		9th grade males	$\alpha = .81$	Internal Consistency
		9th grade females	$\alpha = .90$	
		$r = .76$		Test-Retest
Intrinsic Value		9th grade males	$\alpha = .88$	Internal Consistency
		9th grade females	$\alpha = .89$	
DeBacker & Nelson (1999)	5 point Likert scale			
Perceived Ability		9th and 10th grade	$\alpha = .93$	Internal Consistency
Intrinsic Value		9th and 10th grade	$\alpha = .83$	Internal Consistency
Importance Value		9th and 10th grade	$\alpha = .92$	Internal Consistency
Durik et al. (2006)	7-point Likert scale			
Ability Self-Concept		4th grade	$\alpha = .88$	Internal Consistency
		10th grade	$\alpha = .92$	
Intrinsic Value		4th grade	$\alpha = .82$	Internal Consistency
		10th grade	$\alpha = .89$	
Importance Value		4th grade	$\alpha = .57$	Internal Consistency
		10th grade	$\alpha = .85$	

Greene et al. (1999)	5 point scale			
Perceived Ability		10^{th}, 11^{th}, 12^{th} grade	α =.91	Internal Consistency
Intrinsic Value		10^{th}, 11^{th}, 12^{th} grade	α =.73	Internal Consistency
Utility Value		10^{th}, 11^{th}, 12^{th} grade	α =.87	Internal Consistency
Attainment Value		10^{th}, 11^{th}, 12^{th} grade	α =.76	Internal Consistency
Nagy et al. (2006)	5 point scale			
Math Self-Concept		10^{th}, 12^{th} grade	α =.87	Internal Consistency
Biology Self-Concept		10^{th}, 12^{th} grade	α =.88	Internal Consistency
Math Intrinsic Value		10^{th}, 12^{th} grade	α =.83	Internal Consistency
Biology Intrinsic Value		10^{th}, 12^{th} grade	α =.90	Internal Consistency
Simpkins et al. (2006)	7 point Likert scale			
Math Self-Concept		6^{th} grade	α = .78	Internal Consistency
		10^{th} grade	α = .85	
Science Self-Concept		6^{th} grade	α = .86	Internal Consistency
		10^{th} grade	α = .90	
Math Importance Value		6^{th} grade	α = .71	Internal Consistency
		10^{th} grade	α = .84	
Science Importance Value		6^{th} grade	α = .92	Internal Consistency
		10^{th} grade	α = .84	
Math Interest Value		6^{th} grade	α = .61	Internal Consistency
		10^{th} grade	α = .71	

Science Interest Value		6th grade 10th grade	α =. 92 α = .71	Internal Consistency
Steinmayr & Spinath (2009)	5 point Likert scale			
Ability Self-Perception		11th and 12th grade Math German	α =. 95 α = .70	Internal Consistency
Watt (2006)	7 point Likert scale			
Success Expectancies		9th grade- 11th grade		None Provided
Intrinsic Value		9th grade- 11th grade		None Provided
Utility Value		9th grade- 11th grade		None Provided

Table 9. *Summary of Validity for Previous Expectancy-Value Motivation Studies.*

Study/Construct	Scale	Population	Validity Type	Method
Battle & Wigfield (2003) Cost Value	5-point Likert scale	undergraduate females	Construct	CFA
Crombie et al. (2005)	7-point Likert scale			

Math Usefulness Value		9th grade males 9th grade females	Construct	CFA
Intrinsic Value		9th grade males 9th grade females	Construct	CFA
DeBacker & Nelson (1999)	5 point Likert scale			
Perceived Ability		9th and 10th grade	Construct	CFA
Intrinsic Value		9th and 10th grade	Construct	CFA
Importance Value		9th and 10th grade	Construct	CFA combined attainment and utility, creating importance
Durik et al. (2006)	7-point Likert scale			
Ability Self-Concept		4th grade 10th grade	Construct	Validated in previous research
Intrinsic Value		4th grade 10th grade	Construct	Validated in previous research
Importance Value		4th grade 10th grade	Construct	Validated in previous research
Greene et al. (1999)	5 point scale			
Perceived Ability		10th, 11th, 12th grade	Construct	CFA
Intrinsic Value		10th, 11th, 12th grade	Construct	CFA
Utility Value		10th, 11th, 12th grade	Construct	Loaded on same factor as Attainment Value
Attainment Value		10th, 11th, 12th grade	Construct	Loaded on same factor as Utility Value

Nagy et al. (2006)	5 point scale			
Math Self-Concept		10th, 12th grade	Construct	CFA
Biology Self-Concept		10th, 12th grade	Construct	CFA
Math Intrinsic Value		10th, 12th grade	Construct	CFA
Biology Intrinsic Value		10th, 12th grade	Construct	CFA
Simpkins et al. (2006)	7-point Likert scale			
Math Self-Concept		6th grade 10th grade	Construct	SEM model comparison and fit
Science Self-Concept		6th grade 10th grade	Construct	SEM model comparison and fit
Math Importance Value		6th grade 10th grade	Construct	SEM model comparison and fit
Science Importance Value		6th grade 10th grade	Construct	SEM model comparison and fit
Math Interest Value		6th grade 10th grade	Construct	SEM model comparison and fit
Science Interest Value		6th grade 10th grade	Construct	SEM model comparison and fit
Watt (2006)	7 point Likert scale			
Success Expectancies		9th grade- 11th grade		None Provided
Intrinsic Value		9th grade- 11th grade		None Provided
Utility Value		9th grade- 11th grade		None Provided

Note. CFA =Confirmatory factor analysis; SEM = Structural Equation Modeling

Motivation

Appendix A provides information about the motivation survey, which used a 7 point Likert scale with anchor responses ranging from 1 (*not very worthwhile/none at all/very hard/the worst*) through 7 (*very worthwhile/very true/very easy/very good/the best*).

Expectancies for success. Four items for expectancy for success were included in the motivation questionnaire. In previous studies, this construct has loaded together with ability beliefs in confirmatory factor analysis (Eccles & Wigfield, 1995; Eccles & Wigfield, 2000). However, they are theoretically distinct, and other researchers have initially kept the two constructs separate in analyses (Steinmayr & Spinath, 2009). Survey questions 1-4 asked about expectancies for success; the reliability of each item that was used as an indicator variable in the final analysis is reported in Chapter 4.

Perceived ability. Four items in the motivation questionnaire were used to evaluate students' perceptions about their ability in English/reading. This construct is known to correlate highly with the expectancy for success but is conceptually different because ability beliefs focus on present ability and expectancies focus on the future (Wigfield & Eccles, 2000). Ability beliefs also are also moderately to highly correlated with academic achievement within domains (see Steinmayr & Spinath, 2009) and there is also an established causal relationship between ability self-concepts and school achievement. Prior achievement influences ability self-perception and prior ability beliefs influence subsequent achievement (see Steinmayr & Spinath). To convey that reading skills were the ability of interest, the survey questions used both "English" and "reading" because although the intended focus was less on the content learned in English class and

more on the task and skill of reading, students are assumed the most interaction with reading-based comprehension and skills during their English class period. Survey items 5-8 concern perceived ability; the reliability of each item that was used as an indicator variable in the final analysis is reported in Chapter 4.

Importance task value. The four items for importance value combined the utility and attainment value questions created by Eccles and Wigfield (2000), which has been done in other studies (Durik et al., 2006; Simpkins et al., 2006). As reviewed in previous chapters, students with LD may devalue tasks on which they do not excel (Crabtree & Rutland, 2001), and African American students may do so to avoid negative consequences (oppositional identity; Ogbu, 1978); therefore attainment and usefulness are not expected to load onto different factors. Studies have used these constructs both individually (DeBacker & Nelson, 1999; Greene et al., 1999) and combined (Durik, et al., 2006; Simpkins et al., 2006). Survey items 9-12 found in Appendix A ask about importance task value; the reliability of each item that was used as an indicator variable in the final analysis is reported in Chapter 4.

Intrinsic task value. The three items for intrinsic value were based on those outlined by Eccles and Wigfield (2000) and used in other studies (Crombie et al., 2005; Simpkins et al., 2006; Watt, 2006). Survey items 13- 15 ask about intrinsic value; the reliability of each item that was used as an indicator variable in the final analysis is reported in Chapter 4.

Cost value. Three cost value items were adapted from a scale by Battle and Wigfield (2003) and Eccles and Wigfield (Eccles & Wigfield, nd). Cost value was hypothesized to be negatively related to intrinsic value (the higher the cost value, the less

intrinsic value); Survey items 16-18 asked about cost value. Items 16 and 18 concerned effort (e.g. “Is the amount of effort it will take you to do well in English this year worthwhile to you?”, while item 17 reflected time spent on a task (“How much does the amount of time you spend on English/reading keep you from doing other things you would like to do?”). None of the cost value items were used in the final analysis. The decision to remove these items is explained in Chapter 4.

Learner Status

Students who had a reading goal on their IEP and were receiving instruction from a general education English teacher as members of general education classrooms receiving instruction were purposefully included in this study. The variable of interest was the presence of a documented reading goal in an Individualized Education Plan (IEP). The study investigated whether the presence of this variable accounted for a unique variance in scores beyond covariates, perceived ability, and/or motivation constructs for either group of readers. Ten participants had an IEP reading goal, i.e., status as a student with a documented reading goal, which was confirmed through teacher report and which could be viewed as a concern about the reliability of the variable.

Control Variables

Race, gender, SES, and prior achievement were control variables. Information concerning these and other participant identifying information were collected on the demographic questionnaires completed by both parents and students. All information was presented in a multiple choice format. Interactions between the control variables and motivation factors were not explored. Although other studies examined these interactions, the purpose of this study was to evaluate how motivation and then the IEP reading goal

predicted reading scores and enrollment intentions above and beyond demographic variables. No hypotheses were offered for interactions. The student demographic survey can be found in Appendix B and the parent version in Appendix C.

Race. Race is frequently a variable of interest when analyzing performance on school-related or academic tasks, and research of the motivation students from non-dominant populations has revealed that there are differences by race in some motivation constructs, such as attribution, there are similarities in others, such as expectancies for success (Graham, 1994). Initially, because the sample of participants in this study was anticipated to be predominantly African/African-American/Black, race was expected to be controlled by design. However, students who identified as bi-racial or multi-racial (*N* = 28), White (*N* = 9), American Indian (*N* = 2), Southeast Asian (*N* = 1), or Asian (*N* =1) were present in the classrooms and returned consent forms. Twenty-two students chose not to identify their race. Of the remaining participants, 174 (79%) identified as African/African-American/Black and these were included in the analyses for research question 1.

Gender. Although gender is not of direct interest to this study, it is a frequent variable of interest in other studies that have shown that it influences the contributions of motivation to academic achievement (Crombie et al., 2005; Durik et al., 2006; Simpkins, et al., 2006). All students reported gender, which was a dichotomous variable. One hundred six participants were female.

Socio-economic status. Socio-economic status (SES) was computed using the guidelines established by federal Income Eligibility Guidelines (Department of Health and Human Services, 2010). Parents provided the number of people in their household

and their income level; these data were used to create a dichotomous variable, indicating above (1) or below (0) the poverty line. One hundred forty-six students' demographic information placed them below the poverty line; 24 were not; 4 participants' parents did not respond to questions about the number of people in the household and/or income level.

Prior achievement. Participants recorded their language arts/English grade percent (50-100%) on the demographic information survey. Although a reading comprehension test is not the same as a grade percent (course grade) in a language arts/English class, because reading is essential to the class content, some correlation may be assumed. Specifically in the study by Spinath and Steinmayr (2009), the relationship between prior achievement and reading was shown to account for a unique variance in reading scores. Controlling for prior achievement is a common practice in the studies of motivation reviewed in Chapter 2 (see Table 3). Because this survey was completed by the students, there are concerns inherent with self report with the reliability of the variable. Prior achievement was a continuous control variable.

Dependent Variables

Reading Achievement. The Test of Silent Reading Efficiency and Comprehension (TOSREC; Wagner et al., 2010) is a 3-minute individually- or group-administered assessment of silent reading of sentences for comprehension measuring reading efficiency (speed and accuracy) and comprehension. The test is appropriate for screening and progress monitoring of students in grades 1 through 12, as well as for use by researchers for a brief test of reading comprehension (Wagner et al.). In this study, it was given to small groups of students for use by a researcher as a brief test of reading

comprehension. The test was normed on a nationally-representative sample of 3,523 individuals, including members of groups included in this study. Specifically, 16% of the sample was African American, and 4% had a learning disability, which is reflective of national percentages. Normed scores are available for three times during the school year as an index score (a form of standard score) and percentiles. Form A was used because the test administration corresponds to the time of year (fall) on which it is normed (M = 100, SD = 15; for African American, M = 97, SD = 14; for learning disabled, M = 88, SD = 12). Alternate forms delayed administration reliability coefficients for the TOSREC are .83 for 9th grade students and .85 for 10th -12th grade students. Content-description validity, criterion validity, and construct-identification validity were reported for the measure. To provide content-description validity, the authors found targeted vocabulary words for each grade level, drafted sentences that included those words in text similar in length and complexity to sample grade level material, and then used two readability indices to calculate levels. The TOSREC was created so that average readers would spend one-third of their time with below level text, one third with on-grade level text, and one-third with above level text; thus, students will spend most of their time reading the texts on the level which "maximally informative about their reading level" (Wagner et al., p. 32). Additionally, the format resembles that of other reading fluency tests. Criterion predictive validity was established (a) through a review of correlations between the 40 forms of the TOSREC (4 per grade level) and the Florida Comprehensive Assessment Norm Referenced Test reading scaled scores (r = .68 to .73), (b) correlations with selected TOSREC forms with criterion measures (none at the 9th or 10th grade level), (c) comparisons of means, standard deviations, and correlations between TOSREC and

criterion test scores, and (d) predictive outcome analysis of selected TOSREC forms' sensitivity (.96), specificity (.84), and positive predictive value (.84) of identification of below, average, and above average readers. Construct-identification validity was established through an analysis of subgroup means and standard deviations; all racial and gender groups fell within the average range with little difference in the mean. Additionally, students with learning disabilities were below (M = 88, SD = 12) and gifted students above (M = 119, SD = 13) the average, which would also be expected. For 6th, 7th, and 8th grade, the Form A scores and the GRADE test of listening comprehension and the KBIT-2 intelligence test had large correlations (r = .82 and .66 respectively). Based on these results, TOSREC is valid measure for the purposes of screening to identify poor readers, monitoring progress, and student assessment by clinicians and researchers.

Future enrollment intentions. Multiple studies reviewed in Chapter 2 considered enrollment intentions as a dependent variable in analyses (Crombie et al., 2005; Durik et al., 2006; Jodl et al., 2001; Nagy, et al., 2006; Simpkins, et al., 2006; Watt, 2006; Watt et al., 2006). Eccles, et al.'s (1983; 1997) model for expectancy-value theory specifically includes future course and career choices as an outcome related to cost, importance, and intrinsic motivation, perceived ability, and expectancies for success. Survey items 19-21 ask about future enrollment intentions.

Data Analysis

The data analysis included descriptive statistics (means, standard deviations, *N*, skewness, kurtosis) for independent and dependent variables, bivariate correlations between all variables, exploratory factor analysis (EFA) of motivation constructs and structural equation modeling (SEM) of the relationships between latent and observed

variables. This section includes (a) research questions (b) methodology (c) modeled variables and equations and (d) anticipated outcomes/hypotheses.

Research Questions

The following questions guided this study:

1. What is the factor structure of major constructs in expectancy-value theory of motivation (ability beliefs, expectancies for success, and importance, intrinsic, and cost task values in reading/English) in African American adolescents?

2. What is the relationship between perceived reading/English ability, expectancies for success, cost, intrinsic, and importance task values for reading/English, and performance on a reading assessment for a sample of African American adolescents? Does the presence of an IEP with a reading goal add to the relationship?

3. What is the relationship between perceived reading/English ability, expectancy-value motivation constructs (listed above) and future course enrollment for African American adolescents? Does the presence of an IEP with a reading goal add to the relationship?

Potential Methodologies

As this study used an established theory with a new sample, EFA was necessary to verify the measurement structure before moving into a full model. Structural equation modeling (SEM), multiple regression analysis (MRA), t-tests, ANOVA, and hierarchical linear modeling (HLM) have recently been used to analyze relationships between academic achievement, gender, motivation, race, and learner status (see Table 1). For the purposes of this study, SEM and MRA were the relevant potential types of data analysis, primarily because the research questions concentrate on how independent and control

variables account for unique variance in academic achievement at the mean student level. The research questions require more than correlations and differences between groups (t-tests, ANOVA; Pett, Lackey, & Sullivan, 2003) and do not require an analysis at multiple levels, which would dictate the use of HLM. It has been argued that MRA is a specific kind of path analysis, which is a special form of SEM (Pedhazur, 1997). Greene et al. (1999), DeBacker & Nelson (1999) and Watt (2006) used MRA to report results, including the amount of variance accounted for by unique variables, based on the whole sample as well as by gender or class level. Because each of these studies had multiple predictor variables, the authors were able to utilize MRA to analyze their data appropriately. The model proposed by Guthrie et al. (1999) incorporated many of the same covariates and independent variables that this study intends to include (SES, gender, expectancies for success, intrinsic motivation, perceived ability) and the authors successfully controlled for some factors before analyzing the amount of variance accounted for by variables of interest. Like SEM, MRA allows for accounting for the amount of combined and unique variance of a particular factor in a model. In both methods, analyses provide correlations between among variables, predict outcomes for dependent variables, and determine the amount of variance that is accounted for by specific predictor variables. However, in all of these studies, the researchers used only the observed variables and did not consider latent constructs underlying these indicators or that the latent factors might have influenced the dependent variable. In this study, SEM was a more appropriate method of analysis in this study because (a) the indicators are believed to be observed manifestations of latent factors which then influence reading achievement and future course enrollment, (b) SEM allows a more flexible environment

to discuss the variables and relationships and (c) error is not present in latent factors.

Exploratory factor analysis (EFA)

As suggested by Bandalos and Finney (2010), EFA is best to use when a priori knowledge of an underlying structure has not been supported through empirical evidence, such as in this study, when a sample was pulled from an unstudied population. EFA requires a similarly thorough understanding of the constructs underlying theory, and assesses the dimensionality of a measure (indicators) that represents latent constructs. This was the appropriate way to establish the structure of the model because the research questions suggest a hypothesized organization for the set of identified factors, and there is a research base to support that there exists some underlying structure, albeit one that may be different for this sample from others that have been studied. As I have not found studies that include African American high school students of varying academic abilities with and without documented IEP reading goals, it was essential to explore if these latent factors load indicators similarly to those in previous studies with different participants; one potential source of a misspecification of the model could be a mismatch between indicators and how they load onto factors. Although expectancy-value theorists clearly define the constructs within the model, and have provided multiple examples and support for its structure (Eccles & Wigfield, 2000), it was possible that not all of the items on the motivation survey would load onto the latent factors in the same manner, or that a different number of factors might emerge as adequate. After the EFA suggested a measurement model through factor loadings, SEM was completed to confirm that this structure would be supported by the indicator variables.

Confirmatory factor analysis (CFA)

CFA is a type of SEM that deals specifically with the relationships between the observed variables (indicators) and the latent factors. It is hypothesis driven and as the name states, confirmatory in nature, as the parameters of the model are always set in advance (Brown, 2006), and is often used as a precursor to SEM. The primary activities associated with CFA include confirming prior theories or path analyses before moving into another analysis (SEM, MRA) and ensuring that the model established with another population is appropriate for the sample in the current study. It is the *measurement* model that details the number of factors, how the various indicators (observed variables) are related to the latent factors, and the relationships among the indicator variables (Brown). In previous studies, CFA has been used to confirm the relationships among constructs of the expectancy-value model that have been suggested in Chapter 2 as well as support the use of these constructs as independent variables in various data analysis (Crombie et al., 2005; DeBacker & Nelson, 1999; Durik et al., 2006). As Tables 6 and 7 show, the constructs of interest in this study (expectancies for success, perceived ability, task values) have been shown in other studies to be valid and reliable constructs, the purpose of the CFA here would have been to confirm the EFA as it would have used latent, as opposed to emergent, factors. It is established in the expectancy value model and presumed in this study that the underlying factors do not emerge from the observed items, but that the indicators are measures of the underlying constructs. That is, the observed indicators (here, Likert scale responses) load together onto the same underlying, unobservable (latent) factors. If the factors were emergent, the indicators would point to them, not be derived from them. However, as the established model may not to be a good fit for the sample in this study because an African American population with students

with documented reading goals has rarely been used, EFA was first employed to evaluate different relationships among the indicators or factors. The CFA was not completed because the final small sample size precluded the opportunity to pull a sub-group for the EFA and then use the whole sample for the CFA. As a result, only the EFA was used to inform the SEM that followed. Research question 1 encompasses the EFA and the first step of the SEM. *Structural equation modeling (SEM)*

SEM is applied in situations where the relationship of interest is between latent variables. It is most appropriate when there is an a priori hypothesis supported by established theory (Mueller & Hancock, 2010), as in this study, where indicators (survey items) are the measurable variables that manifest the latent motivation factors. As the name implies, SEM incorporates two regression models, including the *measurement* model and the *structural* model. The latter reveals how the various latent factors are related to one another (Brown, 2006) and is most useful when a researcher wants to eliminate error from the analysis of variables, as latent variables are by definition error free. SEM can reduce the number of factors that are entered into a model, which may be especially relevant or helpful if there are many response items for a particular construct, multiple variables of interest, or multiple variables that may have strong underlying relationships that may be better predictors of the dependent variable. As the literature review in Chapter 2 outlined, this is a commonly used data analytic method in the study of motivation in adolescents, both with and without disabilities (see Table 1 for a summary of data analysis methods employed in the studies). A particularly strong example of the application of SEM is Durik et al.'s (2006) study. The latent factors of importance value, intrinsic value, and self-concept were used in three separate models as

predictors of leisurely reading, career aspirations, and course selection from 3rd to 8th to 10th grade. The researchers chose to create three models because importance value, intrinsic value, and self-concept were so highly correlated.

Analyses of the collected data were conducted in two steps. First, I employed EFA to evaluate the construct validity of the expectancy value model for a sample of African American adolescents in a full inclusion classroom. Although CFA was intended to confirm the EFA factor loadings, the sample size was not adequate to provide a both a smaller group for the EFA and then a full group for confirmation. Therefore, SEM was used in research questions 1 to evaluate the goodness of fit of the suggested model. This data analysis method was also applied to test the hypothesized models in research questions 2-4 that included the IEP reading goal variable in research questions 3 and a change in dependent variable in question 4. A review of the literature on the most appropriate applications of SEM (Brown, 2006; Mueller & Hancock, 2010; Pedhazur, 1997; Pett, Lackey, & Sullivan, 2003) as well as of previous studies (Crombie et al., 2005; Durik et al., 2006; Nagy et al., 2006) that have examined the relationships among adolescent academic achievement and motivation supported this combined method of data analysis.

Analysis Considerations

Latent Variable Measurement

As they are not observable, latent factors do not have a metric (unit of measurement). Because this study employed latent factors as predictors of reading achievement, a metric must be created for each factor. Each of the motivation indicators in this study is part of a 7-point Likert scale, and therefore the same metric was used, a

standardized unit created by the Mplus program, as the latent factors were created from loadings of those observed indicators. Mueller and Hancock (2010) and Brown (2006) recommend a minimum of three indicators per factor, with the suggestion of diminishing returns after six indicators, and between "four to six indicators of reasonable quality practically ideal" (p. 375, Mueller & Hancock, 2010). Each of the motivation constructs eventually used in this analysis had two to six indicators that have been shown to be internally consistent and theoretically valid in previous studies.

Reliability

In this study, coefficient *H* was used to determine the reliability of the latent motivation factors. *H* is the "squared correlation between the latent construct and the optimum linear composite formed from the measured indicators." (p. 203, Hancock & Mueller, 2010). This coefficient is never less than the best indicator's reliability and functions as a reliability estimate across all measured indicators of the single latent construct. This construct has been suggested as a more appropriate measure of reliability for latent factors and is also referred to as maximal reliability. Coefficient *H* is calculated using the following formula:

$$H = 1/[1 + 1/((l\ 2/1)/(1 - l\ 2/1) + \cdots) \quad ((l\ 2/p))/(+ (1 - l\ 2/p)))]$$

In this formula, $\frac{l\frac{2}{1}}{\left(1 - l\frac{2}{1}\right)}$ represents the ratio of the proportion of the variance in the latent factor that is explained by the construct (the reliability) to the proportion unexplained. This means that *H* is an aggregate function of reliability across *p* indicator variables (Hancock & Mueller, 2001). This reliability coefficient is based on the

indicators but is an estimate across all the measured indicators of the variable and is therefore a more appropriate coefficient than Cronbach's alpha to report for latent variables such as those used in this study.

The EFA model was specified before running the analyses, and then it was necessary to revise the model to ensure a better fit (Brown, 2006) when running a SEM with the suggested factor loadings. A CFA was not run, as previously stated, because of the small sample size. As no studies had included African American high school students of varying academic abilities with and without documented reading goals, it was essential to explore if the latent factors loaded indicators similarly to those in previous studies with different participants. These results are presented in Chapter 4.

Missing Data

Missing data are of concern for a few reasons. First, if cases with missing data are simply removed from an analysis (*listwise* or *casewise deletion*), then the question arises of how well the smaller sample represents the larger, initial sample and/or the population that is hoped to be measured. Even if listwise deletion is appropriate, deleting cases from any analysis can lead to concerns about power – the probability to detect an effect when one exists in the population. Additionally, there is the concern that potentially significant relationships that exist among the missing and non-missing variables are ignored, unanalyzed or abandoned when deleted without further analysis of the pattern of missing data. Identifying the underlying mechanism for why the data are missing can inform which statistical methods are appropriate to obtain valid results.

There are three missing data mechanisms outlined by Rubin (1976) that are commonly used to explain why the data are missing and to describe how the probability

of missing values relate to the data. Each is explained in both the larger context of missing data analysis as well as the finite context of this study. This is followed by a brief summary of the current methods available for handling missing data. Finally, an explanation of how missing data was addressed in this study is given.

Missing data assumptions/mechanisms. Data are *missing at random* (MAR) when the probability of missing data on a variable is related to some other measured variable in the analysis model but not to the values of the variable itself (Enders, 2010). Although the name implies that there is no rhyme or reason to the pattern of absent data, in fact there is a systematic relationship between one or more measured variables and the probability of missing data. The data that are present give information about the missing data. In this study, if the probability of missingness is related to of the prior achievement variable, then MAR would be an acceptable mechanism for analysis of the data. However, there is no way to confirm that the missingness is not related to other variables because there is no way to confirm or deny the values of the missing prior achievement scores. MAR is the default way of dealing with missing data in the maximum likelihood estimation and the multiple imputation methods, which posed a problem for this study, given the high number of missing data on the prior achievement variable and the reality that it is not possible to confirm or deny those values.

Missing completely at random (MCAR) is the probability that missing data on a variable is unrelated to other measured variables as well as the value of the variable itself (Enders, 2010); in other words, this mechanism assumes a truly random and haphazard missingness. The cases that are missing are no different from the cases that are present, so if the data are MCAR, the result is a smaller sample size but one that reflects the same

parameters as would have been obtained had the full dataset been used for the analysis. This is the only assumption that can be empirically tested. In this study, it is possible to verify if the prior achievement variable is missing completely at random by comparing the means of the achievement scores of students who did report their prior achievement and those who did not. If the means for the two groups are not statistically significantly different, that is, if they are statistically the same, then these data could be argued to the MCAR. An independent t-test or other comparison of means would test whether or not this would be an appropriate mechanism for approaching data in this study. This is considered the most stringent of assumptions because it is very unlikely to be satisfied in practice (Baraldi & Enders, 2010).

Data are *missing not at random* (MNAR) when the probability of missing data on a variable is related to the variable itself (Enders 2010). In this study, data would be MNAR if the reading achievement (response) dependent ariable were missing because the test was not taken even though other data were completed. As with MAR, there is no way to verify that the data are MNAR without knowing the values of the missing variables. Because students who did not take the reading achievement assessment (TOSREC) were not included in the analysis, any missing data are not a function of MNAR.

Methods for approaching missing data. Although there are numerous traditional and more modern methods for approaching missing data, the three methods most commonly used ones are summarized below. Two traditional methods include *listwise, or casewise, deletion* and *single imputation*; the increasingly frequently used methods include *multiple imputation* and *maximum likelihood*.

The major advantages to listwise deletion, a traditional missing data technique, are that it produces a complete dataset which allows for the use of standard analysis techniques (Baraldi & Enders, 2010) and no special computation methods are required (Allison, 2002). This method has two important drawbacks, namely a decrease in sample size (and the concurrent decrease in power) and an implicit assumption that data are MCAR. Additionally, researchers have avoided deleting entire cases through single imputation, i.e., mean imputation, regression imputation, and stochastic regression imputation, each of which has its own drawbacks, including biased parameter estimates and attenuates the correlation estimate (Baraldi & Enders). If the data that are missing are MCAR or if a small sample size can be analyzed in such a way that power is not compromised, these limitations are minimized. The bias found in these methods is believed to be addressed through the unbiased estimates found through maximum likelihood and multiple imputation.

Multiple imputation assumes multivariate normality and data that are presumed to be MAR. It consists of three separate steps: imputing data, analyzing data, and pooling the results (Baraldi & Enders, 2010). In the first phase, estimates are used to construct a set of regression equations that predict the incomplete variables from those that are complete, which in turn produce predicted scores for the missing values and a normally distributed residual term is added to keep the variability of the data. These ‘complete’ datasets are carried into the posterior step where Bayesian estimation principles are used to generate new estimates. This procedure creates a new set of parameter values that randomly differ from those that were used to create the input values. These estimates represent random samples from a distribution of replacement values for the missing data.

In the analysis phase, several estimates are calculated; these are averaged and used in the final step, the pooling phase, which uses the standard errors from all of the imputed datasets to create a single set of values. This is more effective than single imputation (referenced in listwise deletion). However, it is dependent on MAR, which cannot be empirically tested.

Maximum likelihood also assumes multivariate normality and MAR data. It uses complete and incomplete data to identify parameter values that have the highest probability of producing the sample data (Baraldi & Enders, 2010). The loglikelihood is used to quantify the distance between observed data points and the mean with the goal of identifying the parameter estimates that minimize these distances. The parameters are unknown, so the maximum likelihood function keeps substituting different values until it estimates the best fit. In maximum likelihood, data is neither removes data (as in likewise deletion) nor imputes it (as with single or multiple imputation). However, as with multiple imputation, this method of handling missing data relies on MAR, which is an untestable assumption, and is considered the drawback to this method.

For the purposes of this study, the missing data were considered MCAR; subsequently, an independent t-test was first run to verify that this assumption was reasonable. Based on the results listwise deletion was used as the method for handling the missing data. With the reduced sample size, Bayesian estimation, explained below, was used to analyze the new, smaller dataset. Chapter 4 details the process of ensuring MCAR was the appropriate missing data mechanism and the method for handling missing data, and summarizes how Bayesian estimation was used to analyze the resulting smaller sample size.

Bayesian estimation. A Bayesian method using Markov chain Monte Carlo (MCMC) estimation was initially chosen for this study in lieu of the more traditional ML method because of its history as an appropriate method of analysis for small sample sizes in SEM (Lee & Song, 2004). Unlike methods such as maximum likelihood or ordinary least squares, in Bayesian estimation, the parameters are considered random variables with distributional assumptions (Enders, 2010). Whereas in other methods there is a confidence interval around the parameter which suggests that, for example, 95 out of 100 *samples* will fall within that range, the 95% probability that Bayesian estimation provides suggests that the true *parameter* is contained within the *credible* interval. In a Bayesian analysis, intervals for parameter estimates are called credible intervals and are interpreted as the probability that the parameter falls into the interval (Lynch, 2007). This means that the estimate is tied to the parameter, not the data or repeated sampling (Enders); it is based on the principle that the probability distribution of a parameter is found by repeatedly sampling from it (Palardy, 2010). Like maximum likelihood, though, Bayesian estimation is based on what is known about the parameter.

There are three steps that must be followed to complete Bayesian estimation. First, a prior distribution must be specified for all random quantities in the model including the parameters and the data given the parameters (known as the likelihood function). Inferences are made about the posterior distribution of the parameters given the data (Enders, 2010). The adequacy of Bayesian estimation for a dataset is evaluated through a posterior predictive check (PPC). Bayesian estimation is carried out in this study through the program M*plus* (Version 6.1, Muthén & Muthén, 2010). In this software, the default estimation algorithm that is used to carry out the MCMC

computations is the Gibbs sampler. The Gibbs sampler picks a starting value for the parameter and then subsequent values are created through multiple simulated samples given the data and the last known value of the other parameters. When a large sequence of simulated values is generated for each parameter it is understood that eventually the distribution from which the sample parameter values are drawn is the posterior distribution. With some preliminary exploration it can be determined when the algorithm is sampling from this posterior distribution. The sample values (known as burn-in samples) leading up to arriving at this destination are discarded, and a reasonable number of draws from the posterior are then collected and used for the analysis. As summarized later in this chapter, the ease with which I was able to specify the model with M*plus* language was one reason for its selection for this study.

Within the third step, the defining of the posterior distribution, there are three additional phases. First, from each of the draws from the simulated posterior distribution, a replicated dataset is simulated. Then, the value of the test quality is calculated for the observed and replicated data. Finally, the values of the observed and replicated data are compared, and the proportion of simulated draws for which the test quantity of the replicated data are greater than the observed data is the post predictive *p*-value (PP *p*-value; Leenen, Mechelen, Gelman, & Knop, 2008). Each MCMC algorithm consists of chains that must converge to the posterior distribution (if there is no convergence at 50,000 iterations, M*plus* terminates trying to fit the data to the model). These chains, which begin at random starting values of the parameters, must converge in order for the 95% credible interval for a PP *p*-value to be calculated. These chains can be observed in trace plots which M*plus* provides. Trace plots provide a history of the sampling over the

number of draws so that convergence can be evaluated. Chains that are mixed post-burn (M*plus* uses the 1st iteration) have overlapping patterns. Chains that are not as well-mixed infrequently overlap or veer in different directions. Mixed chains are desired because they suggest that the values that are sampled are coming from the same posterior distribution. They should be scanned during the first phases of an analysis to provide additional support for the acceptance of a model (J. R. Harring, personal communication, March 31, 2011). In this study, two MCMC chains were used.

The PPC is quantified in the PP *p*-value, from which inferences about the data can be drawn, and which is created by comparing the estimate to its standard error. The PPC is particularly useful for the examination of aspects of a model's fit (Leenen et al., 2008) and so was chosen as the statistic to report for each model. The PP *p*-value is calculated based on the 95% credible interval for the difference between the observed and the replicated chi-square values, serving a similar purpose as the change in chi-square coefficient. PP *p*-value is strong, desirable and adequate when it is near .5 and the lower bound of the interval is negative (Lee & Song, 2004; Muthén & Muthén, 2010). For this study, models were considered significant if the PP *p*-value approached or was greater than .5 and/or the lower bound was negative.

Program. The M*plus* program provided multiple options for dealing with categorical data (p. 9, Brown, 2006). Additionally, it was suggested that M*plus* requires no knowledge of a unified sheet in matrix language (J. R. Harring, personal communication, March 29, 2010); that is, it requires less knowledge of programming to work with M*plus* than other programs. M*plus* contains all of the analyses needed to accurately screen data, create estimation models, check the data fit model, compare

nested models, and account for post hoc changes that might be warranted (Muthén & Muthén, 1998-2010).

The default analysis in M*plus* is a maximum likelihood, which has been shown to be appropriate for use with large sample sizes. However, because $N = 175$ for research question 1 and $N = 95$ for all other analyses due to the limited responses to the prior achievement question, a Bayesian model had to be employed. In simulation studies (Lee & Song, 2004) this model of analysis has been shown to be more effective at producing reliable statistics such as estimates and goodness of fit indices for small sample sizes. In this approach, the unknown parameter vector is defined by the mean of the posterior distribution, which is created by assuming that latent factors are missing and so the completed data set is comprised of all of the other data (Lee & Song). Using the Bayesian approach meant that the absolute, parsimonious, and incremental goodness-of-fit indices frequently reported in EFA, CFA, and SEM analyses were not be reported. Instead, a PP *p*-value were used.

The PP *p*-value is the posterior predictive *p*-value. When a Bayesian model is used, multiple chains (in this study, 2) are run. When they converge, the interpretation of the pattern that is created after that point is defined as the PP *p*-value. The PP *p*-value is calculated based on the 95% credible interval for the difference between the observed and the replicated chi-square values, serving a similar purpose as the change in chi-square coefficient. PP *p*-value is strong, desirable and adequate when it is near .5 and the lower bound of the interval is negative (Lee & Song, 2004; Muthén & Muthén, 2010). This index evaluates how the observed and replicated matrices compare and how the model fits compared to a saturated model. This is the first step in preparing to complete model

comparisons or to make post hoc modifications to the model; both steps that will be needed to evaluate if the model with the IEP reading goal variable is a better fit for the data than the model without that variable

Models. It is suggested that in addition to tables providing indices, correlations, and other essential output, appropriately labeled path diagrams be used to represent relationships among variables in SEM (Mueller & Hancock, 2010). The visual representation of the established model related to research question 1 is found in Figure 3. In this diagram of the structural model with the measurement portion, each of these latent factors is hypothesized to be correlated (structural) and the indicators are included (measurement). Previous studies suggest that these proposed relationships would be observed between these constructs of the expectancy value theory of motivation. The pathways are those which are outlined in the hypotheses which introduced this chapter.

In the model shown in Figure 4, the dependent variable, reading achievement, was added. The hypothesized model suggested that the TOSREC score is predicted by SES, gender, race, prior achievement (GPA in English/Language Arts), perceived reading ability/expectancies for success combined factor, cost value factor, importance value factor, and intrinsic value factor. This model addressed the second research question concerning the latent factors and variables listed in the equation hypothesized to significantly predict the outcome variable, reading achievement.

The next model, shown in Figure 5, presents the model with inclusion of the status as a student with a reading goal. This model should be a better fit and account for a greater amount of variance in scores on the participants' TOSREC than the one proposed in research question 2. This model was compared with the previous one to determine

which is a better fit for the data.

The creation of the latent factor enrollment intentions is presented in Figure 6. The final model, shown in Figure 7a, presents the enrollment intentions latent factor as predicted by SES, gender, prior achievement (GPA in English), perceived reading ability/expectancies for success, cost value factor, importance value factor, and intrinsic value factor. In Figure 7b, learner status (an IEP with a reading goal) is added. These models resemble those shown in Figures 4 and 5, as these factors are hypothesized to predict achievement and enrollment intentions (Eccles, et al., 1983; 1997) albeit with differing relationships.

Calculations for Power Analysis

Using the formula for a priori sample size determination suggested by Kim (2005) and MacCallum, Brown, and Sugawara (1996), the following summarizes the calculations for sample size using goodness of fit index root mean square error of approximation (RMSEA), critical noncentrality parameter γ, and degrees of freedom, calculated in part 1 for each model. An RMSEA of .05 is an acceptably "close" goodness of fit (Brown, 2006) for a model.

A. Full Model (research question 2)

1. Using the number of variables (*p)* in the model, the number of parameters to be estimated (*t*), and the unique variances and covariances of observed variables (*u*), the degrees of freedom in the model for research question 1 and Figure 4 is equal to $u - t$. Therefore:

$p = 8$ (Perceived Ability, Importance Task Value, Intrinsic Task Value, Cost Value, Expectancy for Success, SES, Prior Achievement, Gender)

t = 19 (see Figure 4)

$$u = \left(\frac{p(p+1)}{2}\right)$$

$$\frac{8(8+1)}{2}$$

$$36$$

Degrees of freedom = $u - t$ = 36 - 19 = 17

2. Using the root mean square error of approximation (RMSEA), a fit index, of ε = .05, the following formula yields an a priori sample size of 465 students if the power = .08 and α = .05:

$$N\varepsilon = \frac{\delta_{1-\beta}}{\varepsilon^2 df} + 1$$

$$N\varepsilon = \frac{19.710}{.05^2(17)} + 1$$

$$N\varepsilon = 464.76$$

B. Model with documented reading goal variable (research question 3)

1. Using the number of variables (*p)* in the model, the number of parameters to be estimated (*t*), and the unique variances and covariances of observed variables (*u*), the degrees of freedom in the model for research question 1 and Figure 4 is equal to $u - t$. Therefore:

p = 9 (Perceived Ability, Importance Task Value, Intrinsic Task Value, Cost Value, Expectancy for Success, SES, Prior Achievement, Gender, IEP Status)

t = 20 (see Figure 5)

$$u = \left(\frac{p(p+1)}{2}\right)$$

$$\frac{9(9+1)}{2}$$

$$45$$

Degrees of freedom = $u - t$ = 45 - 20 = 25

2. Using the root mean square error of approximation (RMSEA), a fit index, of ε = .05, the following formula yields an a priori sample size of 366 students if the power = .08 and α = .05:

$$N\varepsilon = \frac{\delta_{1-\beta}}{\varepsilon^2 df} + 1$$

$$N\varepsilon = \frac{22.847}{.05^2(25)} + 1$$

$$N\varepsilon = 366.552$$

C. Model with documented reading goal and enrollment intentions as dependent variable (research question 4)

1. Using the number of variables (*p)* in the model, the number of parameters to be estimated (*t*), and the unique variances and covariances of observed variables (*u*), the degrees of freedom in the model for research question 1 and Figure 4 is equal to $u - t$. Therefore:

p = 9 (Perceived Ability, Importance Task Value, Intrinsic Task Value, Cost Value, Expectancy for Success, SES, Prior Achievement, Gender, IEP Status)

t = 20 (see Figure 5)

$$u = \left(\frac{p(p+1)}{2}\right)$$

$$\frac{9(9+1)}{2}$$

$$45$$

Degrees of freedom = $u - t$ = 45 - 20 = 25

2. Using the root mean square error of approximation (RMSEA), a fit index, of ε = .05, the following formula yields an a priori sample size of 366 students if the power = .08 and α = .05:

$$N\varepsilon = \frac{\delta_{1-\beta}}{\varepsilon^2 df} + 1$$

$$N\varepsilon = \frac{22.847}{.05^2(25)} + 1$$

$$N\varepsilon = 366.552$$

As the results presented in Chapter 4 show, this a priori power analysis was mute due to a change in sample size. This is discussed in the results and discussion. A post hoc power analysis was conducted as well, and that is presented as well.

Summary

The methodology summarized in this chapter provided a framework and outline for the results put forth in the next chapter and also supplied support for the analyses used to test the research questions and confirm or refute the hypothesized outcomes. The following chapter presents the results of the data analysis.

Chapter 4

RESULTS

In this chapter, results of the EFA and SEM analyses are summarized.

A priori power analysis suggested a minimum sample size of 366 students. Determining power in SEM (my chosen method) is an elaborate process based on the desired magnitude of the paths I attempted to detect (Hancock, G.R., personal communication May 12, 2010). This process was conducted after potential limitations of sample size (access to schools, classrooms, students with LD) as well as the reliability of the constructs and the dependent variables was considered and was detailed at the end of Chapter 3. Because there were 174 participants in the study who identified as Black/African American/African, Bayesian modeling was used rather than maximum likelihood as it is more appropriate for smaller sample sizes (Lee & Song, 2004).

Analyses were conducted in three stages: exploratory factor analysis (EFA) and structural equation modeling (SEM). Each analysis played an important role in determining the final models that were analyzed. The EFA suggested the measurement model for the analysis and the SEM tested for the validity of the proposed measurement and structural models, including those with reading achievement outcomes and enrollment as dependent variables, and the changes in models, if any, from the presence of an IEP reading goal. Data were screened for outliers; no adjustments were required. Missing data were numerous for the prior achievement variable, which was an item on the student demographic form, because many students did not enter their grade from last year's English/Language Arts course. As outlined in Chapter 3, Bayesian methods were used to respond to the resulting small sample.

Research Question 1: Latent Motivation Factors

Preliminary Analyses of Means and Correlations

Of the 224 students who returned parent consent slips, the majority identified as Black/African American (*N* = 174) or bi-/multiracial (*N* = 28). As per the research questions, only the 174 students who identified themselves as Black/African American were included in the descriptive statistics and analyses. Correlations between motivation indicators ranged from *r* = .184 to .628. There were more females (*N*=106) than males (*N* = 68) in the sample of Black/African American adolescents. Of the 172 families that provided household information, the average family had 4 people (*M* =3.898), and an annual income between $10,000 and $20,000 (range = $0 - >$40,000). Ten students had an IEP reading goal. The participants had an average TOSREC index (standard) score of 82.75 (*SD* = 14.47) which is a standard deviation below the normative mean. Students (*N* = 95) reported an average English/Language Arts grade of 80.65 (*range* = 55 - 99). More 10^{th} graders (*N* = 102) than 9^{th} graders (*N* = 72) were included in the study. Table 10 summarizes information about indicator motivation and other variables used in the analyses.

Table 10. *Descriptive Statistics for Observed Variables used in Final Analysis.*

Variable	N	M	SD	Skew	Kurtosis	Reliability (*H* coefficient)
MOT01	171	5.450	1.204	-0.248	-0.705	.476
MOT02	172	4.756	1.315	-0.147	-0.428	.466
MOT04	172	5.407	2.032	-0.619	-0.374	.397
MOT05	172	5.552	1.299	-0.749	-0.090	.663
MOT06	171	5.357	1.130	-0.242	-0.352	.253
MOT07	171	5.357	1.400	-0.704	0.124	.480

MOT08	171	6.368	.804	-1.101	0.451	.386
MOT10	171	5.327	1.319	-0.696	0.678	.484
MOT11	171	6.304	1.122	-1.695	2.337	.469
MOT12	170	6.053	1.183	-1.135	0.610	.615
MOT13	170	5.335	1.319	-0.588	-0.171	.576
MOT14	170	5.129	1.525	-0.891	0.480	.624
MOT15	169	4.905	1.691	-0.532	-0.484	.874
MOT19	168	4.167	1.810	-0.098	-0.828	.297
MOT20	170	4.682	1.739	-0.508	-0.636	.733
MOT21	170	5.024	1.754	-0.663	-0.427	.611
TOSREC	172	82.75	14.474	0.224	-0.507	*
Prior Achievement	99	80.646	10.228	-.406	-0.129	
Gender (Female)	106					
SES (Below poverty line)	146					
Learner Status (Reading Goal present)	10					

*Reliability for the TOSREC in provided in multiple forms summarized in Chapter 3.

Exploratory Factor Analysis

EFA was used to determine how the observed motivation variables loaded onto latent motivation factors and if this underlying structure was substantively different from measurement models previously suggested in the expectancy-value theory literature. Models are considered to have adequate model-data fit when a number of criteria are met. When using maximum likelihood estimation, which was used in the EFA, several goodness-of-fit indices are produced by the software that fall into three categories: parsimonious indices, incremental indices, and absolute indices. The Root Mean Square Error of Approximation (RMSEA) is a parsimonious index which assesses the overall

discrepancy between observed and implied covariance with attention to the model's complexity and improves as useful parameters are added to the model, which should be equal to or less than .05 (Browne & Cudeck, 1993). The Comparative Fit Index (CFI), an incremental index, evaluates absolute or parsimonious fit relative to a baseline model, here the null model which specifies no relationships among the variables, should be equal to or greater than .95 (Bentler & Bonett, 1980; Hu & Bentler, 1999). The Standardized Root Mean Square Residual (SRMR), an absolute index, along with its confidence interval, should be .08 or lower (Hu & Bentler); this index also improves as the overall discrepancy between observed and implied covariance and as more parameters, regardless of usefulness, are added to the model.

An EFA with a five-factor model (based on the five theoretical motivation constructs suggested in the expectancy-value theory), with the Mplus Geomin oblique rotation, was initially run. The oblique rotation was retained because the theoretical foundation suggests that the indicators and latent factors of motivation are correlated (Bandalos & Finney, 2010); the Geomin rotation was retained because some factor indicators had substantial loadings on more than one factor. The EFA was also run with the Promax rotation (also oblique) and the factor loadings did not change, i.e., the same indicators loaded on more than one factor with similar weights. This initial model did not converge. A review of the eigenvalues showed 4 values had a loading above 1.000, and so a four-factor model was then run. These four factors accounted for 60.16% of the variance, with a large portion (38.95%) being accounted for by the first factor. However, this also did not converge. A three-factor model with all 18 indicators was successful, approaching or meeting the goodness of fit indices' criteria (CFI = .935, RMSEA = .067,

and SRMS = .041) and accounting for 54.29% of the variance. Many indicators cross-loaded in the initial EFA on the factor loadings, but analysis also included a review of the Geomin rotated loadings as well as z-score comparisons. These sources of information indicated that three variables should be removed from the analysis. MOT03, an expectancy value motivation indicator, had negative or low loadings and also had weak correlations with the other expectancies for success/perceived ability motivation indicators (r = -. -0.130 - 0.175). MOT17, a cost value motivation indicator, had negative or low loadings, and MOT18, another cost value motivation indicator, had low negative loadings on all three factors. Support for the removal of these three indicators was also found in the estimate/standard error residual variances (z-scores), which showed that these three variables were not significant on any factor. Additionally, the modification indices and the expected parameter changes for a three-factor model for each (MOT03, MOT17 and MOT18) were minimal; MOT17 and MOT18 only accounted for changes in the other indicator, and MOT03 did not change the expected parameters for any of the indicators in the expectancies for success/perceived ability latent factor. The final cost value motivation indicator (MOT16) loaded on all three factors, suggesting that the cost value motivation factor was not unique, but was retained in this step of the analysis for the purpose of determining to which factor(s) it might significantly contribute.

The EFA was run without MOT03, MOT17, or MOT18. The eigenvalues supported a three-factor model with these adjustments, and so this model was retained. This resulted in a slightly better fit for some indices (CFI = 0.939; RMSEA = 0.083; SRMR = .036) and a three factor model which accounted for 61.95% of the variance. As found in previous studies, the expectancies for success and perceived ability motivation

indicators loaded on the same factor, with the exception of MOT03 (*"How hard would you have to try to do well in an advanced English class?").* The remaining factors loaded onto at least one factor with loadings between .504 and .926. Table 11 provides factor loadings, eigenvalues, and percent of variable explained for the final EFA.

Table 11. *Geomin rotated loadings, eigenvalues, and variance accounted for in the final EFA model motivation indicator variables and factor in the three factor solution.*

	Factor 1	Factor 2	Factor 3
Eigenvalue	6.983	1.381	0.929
Percent Variance	46.55	9.21	6.19
MOT01 (Expectancy for Success)	0.634	0.148	-0.024
MOT02 (Expectancy for Success)	0.791	-0.190	0.009
MOT04 (Expectancy for Success)	0.518	0.164	0.037
MOT05 (Perceived Ability)	0.815	-0.033	0.026
MOT06 (Perceived Ability)	0.467	0.026	0.040
MOT07 (Perceived Ability)	0.472	0.101	0.217
MOT08 (Perceived Ability)	0.274	0.552	-0.099
MOT09 (Importance Value)	0.010	0.366	0.318
MOT10 (Importance Value)	0.008	0.586	0.207
MOT11 (Importance Value)	-0.026	0.697	0.063
MOT12 (Importance Value)	-0.112	0.769	0.098
MOT13 (Importance Value)	0.070	0.506	0.308

MOT14 (Intrinsic Value)	-0.015	0.013	0.961
MOT15 (Intrinsic Value)	0.142	-0.006	0.685
MOT16 (Cost Value)	0.375	0.419	-0.00

This three factor structure posits that expectancies for success/perceived ability, importance value, and intrinsic value are unique constructs. In the studies reviewed in Chapter 2, expectancies for success and perceived ability collapsed into one latent motivation factor and so a maximum of four factors was hypothesized, as importance already included both attainment and utility indicators (DeBacker & Nelson, 1999; Greene & Debacker, 1999). The intrinsic value motivation latent factor has consistently been represented as its own factor (DeBacker & Nelson; Greene et al., 1999). Cost value was expected to create the fourth factor, but this did not happen because the indicators either spread among other factors or did not load on any factor. This was observed in the Debacker and Nelson study, and is commented upon in greater detail in Chapter 5.

Research Question 1: Latent Motivation Factors

SEM was then used to test for the validity of the measurement model related to this hypothesized structure. Figures 8 and 9 provide a path analysis diagram of the measurement model described below. The values have been standardized. Because of the small sample size, the Bayesian method of information theory goodness of fit measure was used in all subsequent analyses, and therefore posterior predictive checking using chi-square and the subsequent posterior predictive *p*-value (PP *p*-value) was used as a goodness of fit index for research questions 2, 3, and 4. As explained in Chapter 3, the PP *p*-value is calculated based on the 95% confidence interval for the difference between the observed and the replicated chi-square values. When the lower bound of the interval is negative, this is considered a strong PP *p*-value and a PP *p*-value near .5 is considered desirable and adequate (Muthén & Muthén, 2010). This index evaluates how the observed and replicated matrices compare and how the model fits compared to a

saturated model. This is the first step in preparing to complete model comparisons or to make post hoc modifications to the model; both steps that need to be evaluated if the model with the IEP reading goal variable is a better fit for the data than the model without that variable.

The purpose of the SEM in question 1 was to evaluate the measurement model suggested by the EFA. The first latent factor, which accounted for half the variance (46.55%) was labeled as a combination of the expectancies for success and the perceived ability indicators (MOT1, MOT2, MOT4, MOT5, and MOT7); MOT03 was dropped in the EFA. One cost value indicator (MOT16) loaded on the second latent factor, labeled as the importance value latent factor (MOT08, MOT10, MOT11, MOT12), and the other two (MOT17 and MOT18) were dropped in the EFA stage. Intrinsic value was the third, separate latent factor, but only two of the three indicator variables loaded (MOT14 and MOT15), with a third (MOT13: "*In general, I find working on English/reading assignments enjoyable*") instead loading on the importance factor. The loading of this indicator on the importance factor instead of the intrinsic variable has no support in previous literature. The three items for intrinsic value were based on those outlined by Eccles and Wigfield (2000) and have been used in other studies (Crombie et al., 2005; Simpkins et al., 2006; Watt, 2006). MOT09 and MOT16 cross loaded on the expectancies for success/perceived ability and importance value motivation factors. Therefore, 7 unique indicators and 1 cross-loading indicator were manifestations of the latent importance value factor (IMPORT), 2 indicator variables composed the intrinsic latent factor (INTRIN), and 6 unique indicators and 1 cross-loading indicator defined the collapsed expectancy for success/perceived ability (EXPECT) factor.

The three factor model suggested by the EFA was not statistically significant, that is, when the three latent factors were entered simultaneously, the resulting measurement model was not a good fit for the data (Figure 8; PP *p*-value < 0.001; 95% credible interval: 23.140- 81.988). MOT09 and MOT16 were then loaded individually on either or both the expectancies for success/perceived ability and importance value motivation factors, but while the model approached significance, the PP *p*-value remained at < 0.001. The failure of the model to reach significance with all of the latent motivation factors together is not unprecedented; in the study by Durik et al., (2006), highly correlated latent motivation variables were run in separate analyses as predictors of each dependent variable. Because the three latent factors were highly correlated (Expectancy/Intrinsic *r* = .756; Intrinsic/Importance *r* = .727; Importance/Expectancy *r* =.719) running each motivation latent factor in a separate analysis was attempted to allow for a better understanding of how each model would function independently. Separately, the intrinsic (PP *p*-value = -0.594; 95% credible interval: -6.896 – 13.820), expectancy value (PP *p*-value = -0.594; 95% credible interval: -18.848 - 28.682) and importance value factor (PP *p*-value = 0.190; 95% credible interval: -8.124 – 25.371) were significant. MOT06 was retained in the /expectancies for success/perceived ability model, although as indicated below, it had the lowest reliability of any retained indicator. Because these three models were individually considered good fits for the data as per the PP *p*-value, each was used to explore the relationships in research questions 2 and 3. This decision does not undermine the theoretical underpinnings of the expectancy-value model, nor does it suggest that the model is not tenable for this sample. Instead, it confirms the strong correlations among the factors. Figure 9 provides a summary of the three models.

The reliability of the indicators in these three models varied (.253 for MOT06 - .874 for MOT15). However, neither the reliability nor the interrelatedness of the indicator variables was used to infer the reliability of the latent motivation factors. Instead, coefficient *H* was used. As detailed in this chapter, coefficient *H* is an appropriate reliability coefficient for latent factors because it is an aggregate of measured indicators of the latent construct (Hancock & Mueller, 2001). The reliability was .847, .847, and .896 for the expectancies for success/perceived ability, importance, and intrinsic value latent motivation factors respectively. These reliability coefficients suggest that the measurement of the three models was reliable. Table 12 provides correlations and reliability coefficients for the factors.

Table 12. *Correlations for latent factors and dependent factors.*

Factor	Expectancies for Success/ Perceived Ability	Importance Value	Intrinsic Value	READ	Enrollment Intentions	Reliability of Latent Factors
Expectancies for Success/ Perceived Ability						.847
Importance Value	0.719					.847
Intrinsic Value	0.756	0.727				.896
READ	0.267	-0.123	-0.032			
Enrollment Intentions	0.500	0.512	0.543	N/A		.

Addressing MCAR

Rationale for MCAR

MCAR is the only empirically testable missing data assumption. Although it has been suggested that it is not tenable that *all* missing data in a sample are MCAR, it is appropriate to suggest that missing data for *one* variable may be truly haphazard. In this study, there were missing data on a number of variables, including some motivation survey items, parent income, household members, or race. However, these compromised a small number of cases. Of interest was the number of cases missing the prior achievement variable; of the 174 cases in which the student identified as Black/African American, only 98 students responded to the prior achievement question. Of those 98, 3 were missing information on one of the other variables included in the analysis, leaving a sample of 95 adolescents who had data on all variables. In MCAR, missing data must be fully random and the probability of missingness must be unrelated to the value of the missing data or the values of any other variable in the dataset (Allison, 2002). The prior achievement question was listed on the student demographic form (see Appendix B), and like the other parts of the survey, was read to the participants out loud. Students were encouraged to respond the question as they were with any part of any assessment or survey in the study. It could be suggested that the students who did not know their English/Language Arts grade from last year would be more (or less) likely to score well on the reading achievement assessment or that there was some other an underlying common trait that that subgroup of students possessed. Because MCAR is a testable assumption, however, I was able to determine, through an independent t-test of the equality of the means, if the students who did provide an English/Language Arts grade were statistically significantly different from those who did not provide the grade.

Participants were divided into two groups: those who had a prior achievement variable and those who did not. An independent *t* test was run to determine if there was a different between the two groups on the outcome variable, reading achievement (TOSREC). The test for the equality of means was used because this was the unit of measure expected to be used in the next steps of the analysis. There was not a significant difference between the means of the two groups whether equal variance was assumed ***t*(**168) = 1.328. *p* = .186 or not *t*(128) = 1.276 *p* = .204. A *t* test was also completed using the 10 Black/African American respondents who had an IEP who did (*N* = 7) or did not (*N* = 3) complete the prior achievement question. There was not a significant difference between the means of the two groups *t*(8) = -.498 *p* = .632. Therefore, *for the prior achievement variable,* MCAR was assumed for analyses in which the TOSREC was the dependent variable.

Listwise deletion was an appropriate, logical, and defendable method for handling the missing data. The concern that the smaller sample would not reflect the larger sample was addressed through the independent t-test which compared the means of groups with and without the prior achievement variable. The other concern with listwise deletion is that the small sample size, namely, that the resulting power for the analysis would be low, and therefore a limitation to the study. However, as established in Chapter 3, Bayesian estimation was chosen as the method of data analysis to address this concern.

Research Question 2: Motivation, Student Reading Goals, and Reading Achievement

Table 12 summarizes the descriptive statistics for the observed variables that were used to answer research questions 2 and 3.

Using each of the three models confirmed in analysis of research question 1, the latent variables and SES, prior achievement, and gender indicator variables were regressed on the latent variable READ, created from the indicator index score of the TOSREC reading achievement assessment. Raw scores were not used because 9th and 10th grade students took different forms of the test. The expectancy for success/perceived ability model with the additional indicator variables was significant (PP *p*-value = 0.484; 95% credible interval: -23.546 – 21.836) as were the intrinsic motivation value model (PP *p*-value = 0.743; 95% credible interval: -19.204 – 11.959), and the importance value model (PP *p*-value = 0.419; 95% credible interval: -19.978 – 25.380). These models are provided in Figure 10.

In the expectancies for success/perceived ability model, only SES was significant ($p = 0.078$), although the motivation latent factor was approaching significance ($p = .105$). In the intrinsic model, the intrinsic pathway itself was not significant, although the paths from SES and prior achievement to READ were both significant ($p = .058$ and $p < .001$ respectively). These findings are in agreement with results of previous studies which have suggested that intrinsic value does not predict academic achievement (Durik et al., 2006). In the importance value model, the importance pathway was not significant, but the prior achievement variable was ($p = .008$).

The second part of research question 2 asked if the addition of an indicator of IEP reading goal status (present/not present) would influence the relationships between the motivation constructs and the reading achievement outcome variable. Using the three models, the motivation variables, SES, and prior achievement were regressed on the TOSREC index scores with a reading goal status indicator added to the model. The

expectancy for success/perceived ability model was not significant (PP *p*-value = 0.000; 95% credible interval: 37.943-108.369) but the intrinsic motivation value model met the goodness of fit index test (PP *p*-value = 0.639; 95% credible interval: -21.056 – 20.511) as did the importance value model ((PP *p*-value = 0.563; 95% credible interval: -29.984 – 23.798) although neither motivation variable was significant within its respective model. In the intrinsic model, the prior achievement variable was again significant ($p = .083$), but SES was not significant (it was significant in the model without the IEP variable). In the importance model, none of the variables was significant; in the previous model, prior achievement had been significant. Therefore, for this sample, the presence of the reading goal did influence the relationships among the variables in the intrinsic value and importance value motivation latent factor models for reading achievement. These models are presented in Figure 11.

Research Question 3: Motivation, Student Reading Goals, and Enrollment Intentions

The final research question required two steps. The first SEM analysis was run to ensure that the indicator variables in the model (MOT19, MOT20, MOT21) were representative of the latent enrollment intentions factor. The hypothesized model (Figure 6) met the goodness of fit index for a Bayesian model (PP *p*-value = .506; 95% credible interval: -12.905 – 10.171). This model, with pathways, is shown in Figure 12. The latent variable had an *H* coefficient reliability of .833. Then, because the model was acceptable, the individual motivation construct models used in research question 2 were analyzed with the dependent variable, future course enrollment.

With the enrollment intentions latent factor dependent variable, the expectancy for success/perceived ability model was significant (PP *p*-value = 0.639; 95% credible

interval: -32.945 – 21.319). Within the model, the pathways between expectancy for success/perceived ability ($p < 0.001$) and gender ($p = .020$) and the enrollment intentions latent factor were significant but SES and prior achievement were not. The intrinsic motivation value model was also significant (PP *p*-value = 0.524; 95% credible interval: -23.069 – 26.406). Within this model, the intrinsic value motivation latent variable was significant ($p < 0.001$) as was gender ($p = .079$). The importance value model was also significant (PP *p*-value = 0.274; 95% credible interval: -23.067 -40.977). Within this model, importance value was significant ($p < 0.001$) but no other variables where. These path diagrams are found in Figure 13. Gender has been repeatedly shown to predict course enrollment (DeBacker & Nelson, 1999; Nagy et al., 2006; Watt, 2006) and so this last finding is at odds with the pattern found in the other models as well as previous studies, in that females were more likely to enroll in classes that required English/reading skills than males. Expectancies for success/perceived ability has often been found to predict enrollment choices (Crombie et al., 2005; Durik et al., 2006; Watt 2006; Watt et al., 2006), as has the utility (importance) value latent motivation factor (Crombie et al.; Durik et al.). Intrinsic value is also frequently related to enrollment choices (Nagy et al.; Watt; Watt et al.).

These analyses were repeated with the addition of the IEP reading goal variable, the results of which are shown in Figure 13. All of the models were significant. The expectancy for success/perceived ability model (PP *p*-value = 0.566; 95% credible interval: -44.837 – 35.498) remained unchanged, with the latent variable and gender both significant ($p < 0.001$ and $p = 0.010$ respectively) and prior achievement, reading goal, and SES not significant. In the intrinsic value model (PP *p*-value = 0.599; 95% credible

interval: -29.809 - 22.309), the intrinsic value latent factor and gender remained significant. In the importance value model, (PP *p*-value = 0.337; 95% credible interval: -28.746 – 42.100), the IEP reading goal variable was once again not significant, but its addition to the model changed the relationships between the other variables and the enrollment intentions variable. Importance value was again significant, as it had been in the first model ($p < 0.001$), as were gender ($p = 0.091$), prior achievement ($p = 0.081$), and SES ($p = 0.078$). These results suggest that the addition of the reading goal variable did not alter the models for expectancies for success/perceived ability or intrinsic value latent factor, but did have an impact on the variables in the importance value latent factor model. There are no previous studies that explore the addition of a variable of learner status, as operationalized by the presence of a reading IEP goal or in any other manner; this finding is discussed further in Chapter 5.

Summary

Overall, the findings suggest that for this sample, motivation factors are predictors of enrollment intentions, but do not predict academic achievement, which is contrary to findings in previous studies (Berndt & Miller, 1990; Crombie et al., 2005; DeBacker & Nelson, 1999; Eccles et al., 2006) of both European and African American adolescents. The finding that expectancy for success/perceived ability, intrinsic and importance values motivation latent factor models accounted for 10% - 22.7% of the variance in reading achievement, and that within the models SES and prior achievement were significant predictors, lends support to studies that suggest that these variables contribute to reading achievement. As in other studies, all of the motivation latent factors and gender significantly contributed to enrollment intentions. The IEP reading goal was not a

significant predictor in any model, although its presence did change the relationships among variables within the model, particularly in the importance value latent factor model with the IEP reading goal. The amount of variance accounted for by the enrollment intentions models did not change when the IEP reading variable was added, and actually decreased in the intrinsic value factor model for reading achievement; only in the importance value factor model for reading achievement was there an increase in variance accounted for by the model with the IEP reading goal. These results, their potential implications, and further areas of study are detailed in Chapter 5.

Chapter 5

DISCUSSION AND CONCLUSION

Summary

Results from this research provide mixed support for the expectancy-value model proposed by Eccles (1983; 1997) and her colleagues (Eccles & Wigfield, 2000) which suggests that motivation constructs (expectancy for success, perceived ability, intrinsic value, importance value, and cost value) are predictors of academic reading achievement and future course enrollment intentions. In this chapter the results of this study are discussed in light of the hypotheses posed, previous literature, and limitations that temper the results and conclusions. Areas for future research on adolescents, motivation, African American students, and learner status are suggested.

A few important aspects of the study must be first outlined to provide a context for the findings. First, the students in this study performed lower, on average, compared to national normative data on the reading assessment (sample M = 82.78; SD = 14.474; TOSREC norms for African American adolescents (M = 97; SD = 14)). Secondly, the sample had more females (N =106; 61%) than males and most students (N = 146; 84%), reside with families that lived below the federal poverty level (M = $10,000 - $20,000 for a household of 4 people; 86% of the sample). Lastly, although the term *adolescent* has been used to describe the students in the sample, those who participated in the study were sampled from only 9th and 10th grade, not the wider swath of ages and grades the definition might suggest. These factors are important when considering the generalizability of the results and drawing comparisons to previous literature. Additionally, of the 224 students who returned permission slips, only 95 participants

were used in the analyses for research questions 2 and 3. This is due in part to the percentage of students who identified as Black/African American (N = 174) and those within that group who provided information about their prior achievement (N = 95). Lastly, given that the majority of previous studies about expectancy-value motivation used European American samples, comparisons between those findings and the results presented here must be cautiously made.

My hypotheses for all three research questions were based on findings from previous studies. However, none of those studies included African American students with and without documented IEP reading goals in a full inclusion setting in a model of expectancy-value theory, and so the hypotheses also reflected concerns voiced by Graham (1994) and others who contemplated that ethnic identity (Gordon Rouse & Austin, 2002; Shernoff & Schmidt, 2007; Yasui et al., 2004) or disability status (Chapman, 1988; Crabtree & Rutland, 2001) may influence expectancies for success and perceived ability, importance value, or intrinsic value of reading tasks. First, I proposed that the expectancy-value model for this sample would resemble that for studied populations of European American adolescents. I also posited that the latent motivation constructs, with the exception of intrinsic value, would be predictive of reading achievement and that factors such as SES, gender, and prior achievement – for different reasons- would not be. On the other hand, expectancies for success/perceived ability and intrinsic value, not importance value, would predict enrollment. Lastly, I hypothesized that the IEP reading goal variable would not be significant for either reading achievement or enrollment intentions.

In brief, individual motivation latent factors were not predictors of reading achievement but always predictors of enrollment intentions. Each of the other indicator variables (SES, gender, prior achievement) was, in at least one model, a statistically significant predictor of reading achievement and enrollment intentions. The results tentatively suggest that for a small sample of urban, low SES African American students, the expectancy-value model established in multiple studies of predominantly European American participants could be a relevant and accurate lens through which to analyze future course enrollment intentions but not academic achievement. These dependent variables measure unique constructs- current reading ability and future intentions- and this may explain the differences in the observed relationships which is discussed further below.

Research Question 1: The EFA and Motivation Model

The initial measurement model of five factors proposed in Figure 3 of the expectancy-value model was rejected by the exploratory factor analysis loadings, which instead suggested a three factor measurement model: expectancies for success/perceived ability, importance value, and intrinsic value, which is a finding supported in previous studies.

Expectancies for Success/Perceived Ability Factor

As hypothesized and seen in previous studies, perceived English/reading ability and expectancies for success collapsed into one empirical construct creating a 6 indicator latent factor. One indicator, thought to represent these constructs (*How well do you expect to do in English this year?*) loaded instead onto the importance factor, and another (*How hard would you have to try to do well in an advanced English course?*) did not load

on any. There is no support from previous studies for this pattern. However, it is possible that the latter question was not interpreted as either an expectation of success or a perceived ability indicator but instead as a question of effort. The relationship between effort, ability, and outcomes depends on many things, including a student's theory on the role of effort in intelligence (Dweck & McMaster, 2009). Students may vary based on how "trying hard" was interpreted and whether they believed it could have a direct impact on current ability or future success. For example, one student who excels at English may have to try hard to do well in a challenging course, but another who also excels may not or perceive that the effort would not impact the result. Regardless, the students' responses rendered the indicator as unimportant.

Cost Value Factor

The cost value factor did not emerge. One indicator had a strong loading on the other factors and two were removed from the model because of overall weak loadings. This suggests that the either cost value construct was not unique from the other motivation constructs, or that the indicators were not adequate measures of the construct for this population. It reflects the pattern in another study (Crombie et al., 2005) in which the cost value indicators did not stand alone in a sample of adolescents. The indicators were taken from two sources which did not also consider any other motivation factors in the analyses (Baker & Wigfield, 2003; Eccles & Wigfield, nd), so it may also be that the small number of indicators used in this study, in conjunction with the competition of other latent factors, was not powerful enough to indicate a unique construct.

Importance Value Factor

The importance value indicators cleanly loaded on one factor with the exception

of one (*In general, how useful is what you learn in school/English?*) which loaded on both the importance value factor and the intrinsic value factor. This is perplexing, and there is no finding in the literature to support why an indicator clearly addressing usefulness of a task would load as intrinsic. This indicator was dropped altogether in the first SEM analysis because it did not add significantly to either the importance value or intrinsic value factor.

Intrinsic Value Factor

Two of the intrinsic value indicators loaded on one unique latent factor but the third (*In general, I find working on reading and English assignments enjoyable*) loaded onto the importance value factor. There is no support in the literature for this finding. It is possible that students misread/misheard the question (the items preceding it asked only about importance). It could also be that "enjoyable" translated for some students as "important to spend time doing" rather than "pleasure". However, without further data on the responses or previous findings to support the loading, it may be viewed as a potential limitation to the survey questions or format and results.

Models

The three factor model suggested in the EFA is tenable both theoretically and empirically. The structure suggests that expectancies for success/perceived ability, importance value, and intrinsic value are unique constructs. As in all of the studies reviewed in Chapter 2, expectancies for success and perceived ability collapsed into one latent motivation factor; since importance already included both attainment and utility indicators, it was expected that the indicator variables for these constructs would load onto the same factor as they had in other studies (DeBacker & Nelson, 1999; Greene &

Debacker, 1999). The intrinsic value motivation latent factor has consistently been represented as its own factor (DeBacker & Nelson; Greene et al., 1999). Cost value was expected to create the fourth factor, but this did not happen; the indicators did not hang together but instead either spread among other factors or did not load on any factor, as has also occurred in previous studies (Debacker & Nelson, 1999). Given the reasons previously stated, the failure of this last factor to emerge is not surprising, although unpredicted.

Both of the survey items that cross-loaded were dropped (one from perceived ability and one from cost value), as stated above, and the final model had 13 indicators with high loadings on three latent factors (expectancies for success/perceived ability, importance value motivation, intrinsic value motivation). However, the overall model did not meet the goodness of fit criteria. After a review of the correlations between the three latent factors, each was run separately to address the remaining research questions; this resulted in three separate models that each met the goodness of fit index (PP *p* –value) for small sample sizes, each of which was used for the remaining research questions. These three models are presented in Figure 9. Because the motivation constructs themselves were retained, the analyses for the remaining research questions were run differently than initially planned. Rather than running four models, 6 models were run for each dependent variable- one for each motivation factor without the reading goal variable and one with it added- for a total of 12 models. Those that were significant are presented in Figures 10-14. However, given the precedence for creating separate models because of the high correlations among the latent motivation factors and the fact that the hypotheses could be tested with these less complex models, no changes to the research questions were

warranted.

Research Question 2: Motivation and Reading Achievement

In the first part of the second research question, the three latent motivation factor models were tested as predictors of reading achievement, measured by the TOSREC (Figure 10). The hypothesis for research question two also stated that learner status would predict unique variance in student performance on the TOSREC, thereby changing the relationships among the motivation factors and control variables. This hypothesis was supported by literature that suggested that students with a reading goal on an IEP have lower academic skills than their peers, value scholastic tasks less, and overestimate their academic abilities (Klassen, 2006; 2010). Thus, the presence of the reading goal on an IEP should not have affected the relationships between variables and factors and reading achievement and not accounted for a significant portion of the variance. Overall, the analysis showed the motivation factors did not predict unique variance in reading achievement not did the presence of the IEP reading goal.

Expectancies for Success/Perceived Ability Model

Previous studies (Berndt & Miller, 1990; Crombie et al., 2005; DeBacker & Nelson, 1999; Eccles et al., 2006) showed that expectancies for success/perceived ability was a strong predictor of reading achievement scores. However, it has also been suggested that African American students tend to hold high expectancies for success that do not always match performance (Graham, 1994). In line with these latter findings, while the model for expectancies for success/perceived ability was acceptable, the factor was not predictive of reading achievement. Therefore, my initial hypothesis, that expectancies for success/perceived ability motivation would be a significant predictor,

was not supported. This finding was somewhat surprising; however, in many studies, overall GPA or subject-specific grades (usually math), were the outcome variables. These variables could be argued to be more in the "control" of students (reflecting effort or persistence at tasks rather than knowledge or skill) or teachers, as well as reflections of classroom-based criterion-referenced assessments (which are purposefully designed to evaluate a smaller set of specific skills) as compared to a variable from a published, nationally normed assessment. GPA could also be more closely related to factors beyond the classroom, including district grading systems, the possible points within the scale, and weighting of courses. In the model, SES was significant, a finding that is frequently repeated. Interestingly, the expectancies for success/perceived ability model was not significant when the IEP reading goal was adding, indicating that its presence altered the model by making it an inadequate fit for the data.

Intrinsic Value Model

As with many of the analyses conducted in other studies, prior achievement and SES were significant predictors of reading achievement in the intrinsic value latent factor model with the IEP reading goal, which was found to be a good fit for the data although the intrinsic value construct was not. In the intrinsic value latent factor model with the IEP reading goal variable, prior achievement was significant, although SES no longer was. It is of note that the presence of an IEP reading goal did alter the role that SES played in the intrinsic value latent factor model, suggesting that for students who have a greater intrinsic value for English/reading tasks, their learner status did alter the predictive contribution of socio-economic standing.

Importance Value Model

The importance value latent factor model without the IEP reading goal was a good fit for the data, but once again the prior achievement variable, not the motivation factor, was a significant predictor of reading achievement. When the IEP reading goal variable was added to the model, it again met the goodness of fit requirements, all of the variables lacked significant predictive value.

These findings suggest that for a sample of urban, predominantly low-income African American students, SES and prior achievement are better predictors of performance on a reading achievement assessment than expectancies for success/perceived ability, intrinsic value, or importance value factors, i.e. that motivation is not as predictive as demographic variables and grades. This is especially relevant to the prior achievement variable, as it was student-reported, and students may not have correctly reported their grades. However, given that only 95 students recorded their English/Language Arts average, this could indicate that those who did respond to the question were accurate and cognizant of their academic standing. Nevertheless, it is a limitation to consider in interpretation of the results.

For this sample of African American students, neither the IEP reading goal nor motivation latent factors was a predictor of academic achievement. Prior achievement was significant in both models (with and without the reading IEP variable) with intrinsic value; SES, although significant in the intrinsic model without the IEP reading goal, was not when it was added to the analysis. In the intrinsic value model, the variance explained by the model decreased from R^2 = .157 to R^2 = .117 with the addition of the reading goal; in the importance value model, however, the R^2 increased from .101 to .227, indicating that the model explained more of the variance in the reading achievement

variable. Because the sample of students with IEP was very small (N = 10), however, no further conclusions can be drawn beyond the change in the significance of SES, and the changed variance accounted for by the model. The sample without reading goals had a low mean for performance on the TOSREC (M = 82.74; SD = 12.45) as did the students with reading goals (M = 85.87; SD = 12.45), and both were below the national normative sample with learning disabilities (M = 88; SD =12) and all African American students (M = 97; SD = 14). That the average reading score for students with a reading goal was comparable to those without a goal is an interesting finding by itself and might also explain the lack of significant prediction on the reading variable. It is an obvious area in need of further research.

Research Question 3: Motivation and Enrollment Intentions

The final research question concerned the relationships between each motivation construct, gender, SES, and prior achievement these as they predicted a second dependent variable, future enrollment intentions. In the literature, enrollment intentions are often tied to gender, and to motivation constructs such as utility value (Crombie et al., 2005), intrinsic value (Durik et al., 2006; Nagy et al., 2006), and/or expectancies for success/perceived ability (Crombie et al.; Durik et al.; Watt, 2006). Question 3 asked if the paths found in previous models would change with the different dependent variable and if these new models were affected by the presence of a reading goal on students' IEP documents. I hypothesized that the expectancies for success/perceived ability and intrinsic value latent factors along with gender, would be significant predictors; SES, prior achievement, the importance value factor, and the reading goal would not be significant. Overall, the analysis showed that the three motivation factors were significant

predictors of course enrollment intentions in models with and without the IEP reading goal variable. The reading goal was not significant, but it did alter the models when added.

Expectancies for Success/Perceived Ability Model

The expectancies for the success/perceived ability model was significant; within it, the predictive pathways from the expectancies for success/perceived ability factor and gender to the enrollment intentions were significant. Neither SES nor prior achievement was significant.

Intrinsic Value Model

This model was significant, and the predictive pathway between the latent motivation variable and enrollment intentions was significant for the intrinsic motivation value as well, which has been both supported (Durik et al., 2006; Nagy et al., 2006) and refuted (Crombie et al., 2005). Gender was also a significant predictor, but SES and prior achievement were not.

Importance Value Model

The importance value model was significant; only the motivation factor was significant. Gender has been repeatedly shown to directly predict course enrollment (Crombie et al., 2005; Jodl et al., 2001; Nagy et al., 2006) and so the importance value model finding does not support the pattern of gender as predictor found in the other models as well as previous studies. This finding was the only one to refute my hypothesis for research question 4.

IEP Reading Goal Variable

When the analyses were repeated with the addition of the IEP reading goal

variable, all of the models met the goodness of fit test, but learner status was not significant in any model. The expectancy for success/perceived ability and intrinsic value models remained unchanged from the previous analysis. In the importance value model, the addition of the learner status goal changed the status of the other variables: gender, prior achievement, and SES were significant in addition to the importance latent factor. This suggests that learner status can influence the relationships among existing variables and factors and enrollment intentions even if the reading goal variable itself is not significant. This influence, however, could be interpreted as minimal. In models both before and after the addition of the reading goal variable, about one-third of the variance in the dependent variable was accounted for (R^2 without reading goal = .314 -.342; R^2 with reading goal =.328-. 352).

Summary

The factor loadings from the EFA performed in research question 1 provided a foundation for the other analyses; the indicators from the motivation survey separated into three unique factors, each of which was run as a separate model as the basis for the two other research questions. Surprisingly, none of the motivation factors was a significant predictor of reading achievement, yet all had significant predictive value for the enrollment intentions. Enrollment intentions, much like GPA, are influenced by other internal factors such as effort and persistence, and external ones, such as knowledge of and/or availability of coursework, beyond the reading ability or skill measured in an assessment such the TOSREC, which may explain some of the differences between the models for enrollment intentions and reading achievement. Expectancy for success/perceived ability and intrinsic value factors were significant in their enrollment

intentions models, which was not the case for models with the TOSREC as the dependent variable. This is a novel finding, as it suggests that the motivation predictors of reading achievement (as measured by academic assessments) are not always those which predict future course enrollment intentions. The future course enrollment intention variable has been repeatedly investigated (Crombie et al., 2005; Durik et al., 2006; Nagy et al., 2006; Simpkins, et al., 2006; Watt, 2006; Watt et al., 2006) and is a reliable and valid construct in this study (see Figure 12). This finding, however, is tempered by the small and homogenous sample, which limits the generalizability of the findings.

Limitations

Students from non-dominant populations have infrequently been focal participants in studies of adolescent expectancy-value motivation. Additionally, there has been little research concerning the role of motivation, above and beyond self-efficacy, that addresses reasons, beyond the disability, that account for the performance of students with learning disabilities on measures of reading comprehension. The strengths of this study lie in addressing these issues and the analysis strategies used. The results suggest that prior achievement and SES are better predictors of academic achievement than motivation constructs, but that motivation trumps these variables when predicting enrollment intentions. However, these strengths and the conclusions to be drawn are tempered by several limitations, including a small sample size and questionable reliability in the prior achievement variable.

As previously detailed and explained, the sample size for this study was much smaller than that which was recommended by the a priori power analysis. Limited statistical power reduces the likelihood of uncovering statistically significant

relationships. In response to the lower response rate (32.9%) and participation rate (31.2 %), and limited student response on the prior achievement variable, a Bayesian model, which is more appropriate for small samples (N = 95), was used in SEM. Using this model, each of the motivation models met the goodness of fit criteria (PP p-value), and therefore the small sample size did not negatively impact power. The latent variables were reliable (see Table 12), which was expected given the reliability of the constructs in previous studies. Similarly, these constructs (through the goodness of fit of the models) were shown to be valid. However, even with the use of Bayesian estimation, given the small samples (N= 174 for EFA and SEM in question 1; N = 95 for all other SEM analyses), these results should be cautiously interpreted only for the group of students who participated in the study.

Another limitation was the inclusion of only 10 students with IEP reading goals in the sample. Given the high percentages of students with special education needs reported in published school data, I expected that a higher proportion of the returned consent forms would be from students with special education needs in reading. This was a factor I could not control, as I did not ask teachers for learner status information until after the testing was completed. The small number of students in this category may have affected how much this factor could influence the models in research questions 3 and 4, although this cannot be stated for certain, as the models in each met the goodness of fit criteria. In future studies, researchers may be able to better control this limitation by asking teachers to provide targeted incentives to students whom they know have IEP's, providing more copies and opportunity to return consent forms, or using schools or classrooms with even greater percentages of students with special education needs to potentially increase a

higher representation of these students in the sample.

There are limitations related to variables, one of which is the prior achievement variable. Of the 174 students who identified as Black/African American who returned consent forms and participated in the reading assessment, motivation survey, and demographic forms, only 95 (54.59%) reported their previous year's grade in English/Language Arts. The grades that were reported (students reported the numeric course year average out of a 100 point scale) may or may not have been accurate. Students were encouraged to complete all sections of the demographic form, but also cautioned against guessing. As a result, 45.41% of the participants did not complete this section. This was investigator error. The IRB consent and assent documents did not explicitly state that a review of student records to verify student English/Language Arts grades would be conducted. Future studies which include prior achievement should minimize this reliability and validity concern by using student records instead of student report. If prior achievement had not proven to be statistically significant in many of the models, removing it from the analyses may have been an opportunity to evaluate a model with more participants. However, because it was obvious that prior achievement was a significant variable in most analyses (and in the prior studies), all the analyses were run with it included.

The other demographic variables, race, ethnicity, and gender, are considered to be reliable, as there were overlapping questions on the parent and student demographic forms; these were reviewed to ensure that race was correctly coded; there were no instances of disagreement for Black/African American participants. Additionally, measuring SES using the federal Poverty Guidelines is more stringent than the free and

reduced meals (FARM) calculations used by the schools reflects the schools' demographics (see Table 6). While therefore a reliable and valid way to evaluate income levels, more students may have been labeled as low SES if the FARM guidelines were used, creating a less diverse sample and potentially different results for status of SES as a predictor variable.

Another potential limitation to this study related to variables is the inclusion of English and reading in the same set of abilities. While the language of both the survey and the expectancy-value theory support the definition provided in earlier chapters, students may or may not have interpreted the content learned in English classes the same as the skills they use in reading a text, and this may have influenced how they answered the motivation survey questions. This in turn may have influenced the results, perhaps explaining why none of the motivation factors were significant predictors of the achievement assessment.

A final note concerns the dependent variable, the TOSREC. Although too vast in scope to be adequately addressed in this discussion, there has been research to suggest that scores on reading comprehension assessments are accounted for by different constructs (oral vocabulary, fluency, word recognition/decoding) and therefore different comprehension tests measure different things (Cutting & Scarborough, 2006). The variance in TOSREC scores may be attributed to any one of a number of reading-related skills, and therefore, as with any study of this kind, results must be filtered through this lens as well.

While these limitations are numerous and require consideration, they do not diminish that for this sample, motivation constructs consistently and significantly predict

future course enrollment intentions with and without the addition of an IEP reading goal variable, and that background variables such as SES and prior achievement predict reading achievement. This study adds to the literature about African American adolescents above and beyond the more frequently investigated variables mentioned in Table 1, and bring a new dimension to research about students with IEP reading goals. While generalizing beyond the sample is not appropriate, the questions answered and those which spring from this study provide a springboard in many directions.

Future Directions for Research

As suggested in previous studies, African American students' expectancies for success and perceived abilities did not predict their reading achievement. Whether this was due to the suggested self-protective factors (see Chapter 1) found in this and other samples, was simply a function of the sample, or a result of the choice of reading achievement variables, must be addressed in additional studies by sampling larger groups of students in a wider range of grades in studies which include both African American and European American youth. These studies might be conducted in racially homogeneous schools so that comparisons between the two groups can be made without considering how school diversity might impact the results, or could be conducted with students in diverse settings to control for factors unique to different school environments. The reading achievement variable could also be varied. It is of interest that most studies that have shown a relationship between expectancies for success and perceived abilities did not use standardized, nationally- normed assessments. The TOSREC is not in a regularly encountered format (sentence verification task), which may have also affected student comfort and/or performance. Students may also have performed differently if

they took a standardized criterion-referenced test that was a closer transfer of classroom based instruction and learning. Future studies could also tease out the self-protective factors through additional surveys, questionnaires and interviews and use those as variables or factors in analyses. Similarly, the fact that importance and intrinsic latent motivation factors contributed significantly to enrollment but not achievement begs for further analysis; as stated earlier, these results suggest that the relationships that can be measured between motivation factors and outcomes may depend more on the dependent variable than other factors. This supports ongoing analysis of the effects of motivation on different outcome variables.

Future research should also consider more thoroughly how a learner's disability status, here operationalized with the IEP reading goal variable, influences latent factors and observed variables in student achievement. The four studies included in the earlier literature review, and the additional studies briefly summarized for their attention to self-efficacy and self-concept in studies of students with learning disabilities, do not include any reference to the expectancy-value motivation constructs of importance, cost, or intrinsic task value. Although expectancies for success and perceived ability are investigated, they are used in various frameworks other than that of Eccles' model (1983; 1997). For practitioners to better assist their students with learning needs in a useful and valid way, researchers need to examine how this group of students approaches academic work from the onset of adolescence through graduation in inclusion settings, in different content areas (especially at the secondary level), and through peer group comparisons. Students with special education needs constitute a growing population of fully included youth in public school classrooms, yet they are woefully understudied and we do not

know enough about how they differ from their peers in task values and related constructs such as effort and persistence. Future research with various dependent variables, including post-secondary outcomes, enrollment intentions, normed assessments, and GPA may help inform instruction that better targets the values and interests of their learners. Multiple group analysis, which was not possible here because of sample size, would provide a window into the similarities and differences between these two groups of students and an opportunity to better understand how and what the learner status variable changes in the model for those students.

This study purposefully focused on self-identified Black/African American adolescents who live in urban communities. In many studies reviewed in Chapter 2, the Black/African American students came from suburban school districts with racially and economically diverse populations. However, 43 % of Black and Hispanic students attend segregated schools with poverty rates over 80 percent, compared to 4 percent of white students (http://diversitydata.sph.harvard.edu/Publications/school_segregation_report.pdf). Thirty-four percent of African American children and youth are growing up in poverty (http://www.nccp.org/publications/pdf/text_843.pdf). These students must be a focus of research efforts if overall student achievement is to be understood. Additionally, few studies were conducted with high school participants. Studies not included in the review that included more diverse student samples were often conducted at the elementary school level. To investigate the disparities in educational attainment and the achievement/opportunity gap, researchers should explore the unknown role that motivation plays. Only through valid and reliable studies which draw participants from

these populations will researchers and educators begin to be able to understand the relationships between motivation and academic outcomes such as performance on a reading assessment or future course enrollment.

As with all studies in which motivation is a variable of interest, there is the concern that the survey questions do not measure what it is that they are purported to measure, that even with the clear factor loadings onto three unique factors and subsequent predictive models, the validity of the models rests on self-reports that can be interpreted in a multitude of ways. Models which investigate interactions with variables used here as controls, and influences such as effort, persistence, and interest, none of which was evaluated here, could also help to explain a greater percent of variance in the chosen dependent variable. This study did not explore how interactions may have changed the observed relationships; this step has been taken in studies of SES, prior achievement, gender and race, but not with learner status. This would be a potential next step in determining how the presence of an IEP reading goal (or other measure of documented disability) may influence student reading performance and course enrollment intentions.

Past studies have established that the constructs of expectancy-value motivation are theoretically and empirically valid, and that the model is tenable for sample of European American students from middle class backgrounds. They have also established a solid foundation for this study by providing support for the continued inclusion of control variables such as gender, SES, and prior achievement in analyses. In continued work with this theory, researchers should consider other factors which may influence the results that were found here. In addition to considering race, different dependent variables, and the measurement of reading achievement, variables such as teacher effects,

peer influence, school type (charter versus neighborhood) and even school nesting effects (homeroom, tracking) can also become part of the model, especially if the sample size is larger and/or the number of participants with IEP reading goals or other characteristics increases.

Conclusions

This study was conducted with the purpose of learning about the relationships between expectancy-value motivation constructs and reading for a sample of urban, low SES, self-identified Black/African American students with and without IEP reading goals. As summarized in Chapter 1 and Table 6, these students represent a disproportionate number of high school dropouts and attend schools with low performance on state-mandated assessments. As seen in the data collected for this study and the broader data collected on the larger school and city learning communities, many urban youth from non-dominant populations attend racially-segregated schools with high percentages of low-income households. Learning more about their motivation as a predictor of reading achievement and enrollment intentions may help educators to provide appropriate supports for student success. Given that most of the literature on expectancy-value theory has focused on European American and/or middle class students, this study provides a glimpse into the workings of students who have not been participants in studies of this kind.

Students with learning disabilities, here operationalized as the presence of a reading goal on an IEP, have not been adequately included in studies of African American or European American youth or with the constructs of the expectancy-value theory. Given that this population of students also suffers from high dropout rates and

struggles in post-secondary settings, further research focused on their unique set of challenges and the factors that influence their academic success is warranted. This study, with a set of only 10 students with reading goals, only begins to suggest how researchers can explore the interesting changes in pathways created by the addition of a learner status variable. Knowing that status as a student with an IEP reading goal was not a predictor of reading achievement or future enrollment intentions is an important piece of information to further investigate and explore.

If researchers and teachers are to address the dismal graduation rates, high drop-out rates, and low levels of motivation that are observed and noted in today's high school classrooms, they must first be aware of the factors which influence student achievement and future course enrollment. Because the models in this study were separated into three aspects of expectancy-value motivation, these can be building blocks to understanding how perceived ability and expectancies for success, importance value, and intrinsic value each influence student performance. The results provide a stepping stone for further studies, suggested above, that can explore these relationships in depth.

For teachers to create supportive learning environments, researchers must provide them with data about how and why students learn. This study sought to investigate the predictive relationship of motivation on reading achievement and future enrollment intentions. Direct and significant relationships between motivation and enrollment intentions were found, yet these relationships disappeared when reading achievement was the dependent variable. These results hint that the choice of outcome variable plays a potential important role in students' motivation as well as our understanding of the motivation constructs and that the connection between motivation and achievement is not

necessarily a direct one. The IEP reading goal was not a significant predictor of either dependent variable, which suggests that status as a learner with special education needs does not necessarily predict a difference in reading achievement or future enrollment intentions in this population. In most models, SES and prior achievement consistently contributed more predictive value to the reading achievement models than motivation, a finding consistent with previous studies, yet were significant predictors of enrollment only when the reading goal variable was added. Although the results are qualifie by limitations, the questions posed by these findings are those which should continue to be examined in a variety of learning contexts so that all adolescents are given ample opportunities to attain academic success.

Appendix A.

Motivation Survey with References to Source

Expectancy Items

1. How good would you be at learning something new in English? (Eccles & Wigfield, 2000)

1	2	3	4	5	6	7
not at all good						**very good**

2. How well do you think you would do on an advanced English/reading assessment to participate in Advanced Placement classes? (Eccles & Wigfield, nd)

1	2	3	4	5	6	7
not at all well						**very well**

3. How hard would you have to try to do well in an advanced English course? (Eccles & Wigfield, nd)

1	2	3	4	5	6	7
Very hard						**Not very hard at all**

4. How successful do you think you would be in a career which required English or reading ability? (Eccles & Wigfield, nd)

1	2	3	4	5	6	7
not at all successful						**very successful**

Perceived Ability

1. How good at English are you? (Eccles & Wigfield, nd)

1	2	3	4	5	6	7
not at all good						**very good**

2. If you were to order all the students in your English class from the worst to the best in English, where would you put yourself? (Eccles & Wigfield, nd)

1	2	3	4	5	6	7
the worst						**the best**

3. In comparison with your other subjects, how good are you in English? (Eccles & Wigfield, nd)

1	2	3	4	5	6	7
much worst						**much better**

4. How well do you expect to do in English this year? (Eccles & Wigfield, 2000)

1	2	3	4	5	6	7
not at all well						**very well**

Importance Value

1. Some things that you learn in school help you do things better outside of class, that is, they are useful. For example, learning about plants might help you to grow a garden. In general, how useful is what you read in school/learn in English? (Eccles & Wigfield, 2000)

1	2	3	4	5	6	7
not at all useful						**very useful**

2. Compared to most of your other activities, how useful is what you learn in English/reading? (Eccles & Wigfield, 2000)

1	2	3	4	5	6	7
not at all useful						**very useful**

3. For me, being good in English/reading is important. (Eccles & Wigfield, 2000)

1	2	3	4	5	6	7
not at all important						**very important**

4. Compared to most of your other activities, how important is it for you to be good at English/reading? (Eccles & Wigfield, 2000)

1	2	3	4	5	6	7
not at all important						**very important**

Intrinsic Value

1. In general, I find working on English/reading assignments enjoyable. (Eccles & Wigfield, 2000)

1	2	3	4	5	6	7
not at all worthwhile						**very worthwhile**

2. How much do you enjoy doing English? (Eccles & Wigfield, 2000)

1 2 3 4 5 6 7

not at all worthwhile **very worthwhile**

3. Compared with your other subjects in school, how much do you like English? (Eccles & Wigfield, nd)

1 2 3 4 5 6 7

none at all **a lot**

Cost Value

1. Is the amount of effort it will take you to do well in English/reading this year worthwhile to you? (Eccles & Wigfield, nd)

1 2 3 4 5 6 7

not at all worthwhile **very worthwhile**

2. How much does the amount of time you spend on English/reading keep you from doing other things you would like to do? (Eccles & Wigfield, 2000)

1 2 3 4 5 6 7

not at all **A lot**

3. Considering what I want to do with my life, doing well in English class/reading is just not worth the effort. (Battle & Wigfield, 2003; Question 31)

1 2 3 4 5 6 7

not true at all **very true**

Enrollment Intentions

1. How likely are you to take more English classes when you don't have to?

1	2	3	4	5	6	7
not at all						**A lot**

2. If you were to attend a two or four year college, how likely would you be to enroll in English classes or classes that require a lot of reading?

1	2	3	4	5	6	7
not at all						**A lot**

3. How likely are you to choose a career which often requires you to use reading skills?

1	2	3	4	5	6	7
not at all						**A lot**

Appendix B.

Participant Demographic Information

ID: ___ ___ ___ ___

1. **Gender**:

O Female O Male

2. **Date of Birth**: _____/_____/19___ **Age**: _____

3. **Race** (Please check as many as apply):

O African-American/Black (including Caribbean-American)

O Caucasian/European American

O Asian (for example, Chinese, Japanese, Korean)

O Indian

O Southeast Asian (for example: Thai, Hmong, Burmese, Vietnamese)

O American Indian

O Bi-racial, Multi-racial

- Please specify race(s):

_____

4. **Ethnicity**:

O Hispanic O Prefer not to answer

O Not Hispanic O Unknown

5. **Mother's Level of Education**:

- O Less than 8th grade
- O Some High School
- O Completed High School
- O Some College or Professional Training
- O Completed 2 or 4 year College
- O Completed Some Graduate School
- O Completed Graduate Degree (MA, MS, PhD, MD, JD)

6. **Father's Level of Education:**

- O Less than 8th grade
- O Some High School
- O Completed High School
- O Some College or Professional Training
- O Completed 2 or 4 year College
- O Completed Some Graduate School
- O Completed Graduate Degree (MA, MS, PhD, MD, JD)

What was your overall grade last year in Language Arts/English? _____

Name: _____

(**Your name will be removed after I give you an identification number.)**

Appendix C

Parent Information Form

1. **Student Name**: _____

2. **Parent Name**: _____

3. **Student Gender**:

O Female O Male

4. **Race** (Please check as many as apply):

O African-American/Black (including Caribbean-American)

O Caucasian/European American

O Asian (for example, Chinese, Japanese, Korean)

O South Asian/Indian

O Southeast Asian (for example: Thai, Hmong, Burmese, Vietnamese)

O American Indian

O Bi-racial, Multi-racial

- Please specify race(s):

_____

O Prefer not to answer

5. **Ethnicity**:

O Hispanic O Prefer not to answer

O Not Hispanic O Unknown

Student ID: ____ ____ ____ ____

6. **Parent's Highest Level of Education Completed**:

- O Less than 8th grade
- O Some High School
- O Completed High School
- O Some College or Professional Training
- O Completed College
- O Completed Some Graduate School
- O Completed Graduate Degree (MA, MS, PhD, MD, JD)

7. **Number of people in your household**: _____

8. Income Range:

- O $0-$10,000
- O $10,001-$20,000
- O $20,001-$30,000
- O $30,001 - $40,000
- O More than $40,00

The information that I have provided is accurate to the best of my knowledge.

Signature: _____

Date: _____

Appendix D.

Parent Consent Form

Please keep this copy for your records.

PARENT PERMISSION FORM

Project Title	Motivation and Reading Achievement of African American Adolescents
Why is this research being done?	This is a research project being conducted by Dr. Deborah Speece and Katryna Andrusik at the University of Maryland, College Park. We are inviting you to participate in this research project because you are the parent or legal guardian of a 9th or 10th grade student at one of the high schools participating in this study. The purpose of this research project is to learn more about the motivation of African American high school students in urban schools. We are interested in learning more about how motivation influences reading performance.
What will I be asked to do?	If you allow your child to participate, you will be asked to complete a short survey asking about your race, ethnicity, income, and level of education. This information will be used to describe the participants as a group, not as individuals. We seek permission to access your child's school records to determine if special education services have been received. If you and your child agree, your child will participate in the study with several others in a small group. Your child will be asked to complete three activities: a form asking about his/her age, gender, race, ethnicity and previous English grade; a second form that asks about how s/he feels about English and reading; and a third form that is a 3 minute reading test measuring reading speed and understanding. These activities will take place in a classroom within the school located near the English classroom for 30-40 minutes. We also ask permission to share the results of the reading test with your child's English teacher and principal. Your name will be entered in the lottery if the pink form is signed and returned to school. If you want to be entered in a lottery but do not want your child to participate, please check the "No Thanks" box below your signature. Parents/guardians will be entered to win a Giant gift card ($50) and students will be entered to win an Itunes gift card ($25), as well as a Best Buy gift card ($100). The class that returns the most signed forms will also win a breakfast or lunch, as per school policy, with their classmates and their English teacher.
What about confidentiality?	We will do our best to keep your personal information confidential. To help protect you and your child's confidentiality, we will assign a code number to each child and take his/her name off the test forms once the numbers and names are matched. Ms. Andrusik will keep the master file that links numbers to names in a locked file and an electronic file with this information will be password protected. Only Dr. Speece and Ms. Andrusik

	will have access to the locked location. If we write a report about this research project, your identity will be protected to the maximum extent possible.	
What are the risks of this research?	There are no known risks associated with participating in this research project.	
What are the benefits of this research?	This research is not designed to help you personally, but the results may help the investigators learn more about high school students. We hope that, in the future, other educators might benefit from this study through improved understanding of what motivates African American teenagers in cities to be successful on academic tasks.	
Do I have to be in this research? May I stop participating at any time?	Your participation and your child's in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized. Your child has the same right to stop participating at any time.	
What if I have questions?	This research is being conducted by Dr. Deborah Speece and Katryna Andrusik in the College of Education at the University of Maryland, College Park. If you have any questions about the research study itself, please contact Dr. Deborah Speece at: 1308 Benjamin Building, University of College Park College Park, MD, 20742 or at 301-405-6482 or via email at dlspeece@umd.edu. If you have questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; (e-mail) irb@umd.edu; (telephone) 301-405-0678. This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.	
Statement of Age of Subject and Consent	Your signature indicates that: you are at least 18 years of age; the research has been explained to you; your questions have been fully answered; and you freely and voluntarily choose to participate in this research project.	
Permission to Participate Signature and Date	**NAME OF STUDENT** (print)	
	NAME OF PARENT (print)	
	PARENT/GUARDIAN Signature	
	DATE	
No thanks. I would like to be entered in the drawings.	**PARENT/GUARDIAN Signature**	
	DATE	

Andrusik

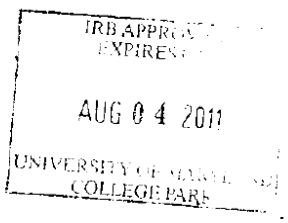
Appendix E.

Student Assent Form

STUDENT ASSENT FORM

Project Title	Motivation and Reading Achievement of African American Adolescents
Why is this research being done?	The purpose of this research project is to learn more about the motivation of African American high school students in urban schools. We are interested in learning more about how motivation influences reading performance. We are inviting you to be in this research project because you are a 9th or 10th grade student at one of the high schools participating in this study.
What will I be asked to do?	Your parent/guardian has already agreed you can participate in this study. If you participate, we will access your school records to determine if additional educational services have been received. If you and your parent/guardian agree you will participate in the study with several others in a small group and asked to complete three activities: a form asking about your age, gender, race, ethnicity and English grade from last year; a second form asking about how you feel about English and reading; and a third form that is a 3 minute reading test that measures your reading speed and understanding. You will participate in a classroom within the school located near your English classroom and will be out of class for 30-40 minutes. We will share the results of the reading test with your English teacher and principal. Your name will be entered in the lottery if the pink permission form was signed and returned to school. If you and your parent/guardian want to be entered in a lottery but you do not want to participate, please write "No Thanks" below your signature. Parents/guardians will be entered to win a Giant gift card ($50) and students will be entered to win an Itunes gift card ($25), as well as a Best Buy gift card ($100). The class that returns the most signed forms will also win a breakfast or lunch, as per school policy, with their classmates and their English teacher.
What about confidentiality?	We will do our best to keep your personal information confidential. To help protect your confidentiality, we will assign you a code number to and take your name off the test forms once the numbers and names have been matched. Katryna Andrusik will keep the master file that links numbers to names in a locked file and an electronic file will be password protected. Only the investigators will have access to the locked location. If we write a report about this research project, your identity will be protected to the maximum extent possible.

What are the risks of this research?	There are no known risks associated with participating in this research project.
What are the benefits of this research?	This research is not designed to help you personally, but the results may help the investigators learn more about high school students. We hope that, in the future, other educators might benefit from this study through improved understanding of what motivates African American teenagers in cities to be successful on academic tasks.
Do I have to be in this research? May I stop participating at any time?	Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.
What if I have questions?	This research is being conducted by Dr. Deborah Speece and Katryna Andrusik in the College of Education at the University of Maryland, College Park. If you have any questions about the research study itself, please contact Dr. Deborah Speece at: 1308 Benjamin Building, University of College Park College Park, MD, 20742 or at 301-405-6482 or via email at dlspeece@umd.edu. If you have questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; (e-mail) irb@umd.edu; (telephone) 301-405-0678 This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.
Statement of Age of Subject and Consent	Your signature indicates that: the research has been explained to you; your questions have been fully answered; and you freely and voluntarily choose to participate in this research project.
Signature and Date	**YOUR NAME (please print)** |
	YOUR SIGNATURE |
	DATE |



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Appendix F. Figures.

Figure 1. Proposed relationships in the expectancy value model (Eccles et al., 1983; 1997) with variables of interest to this study.

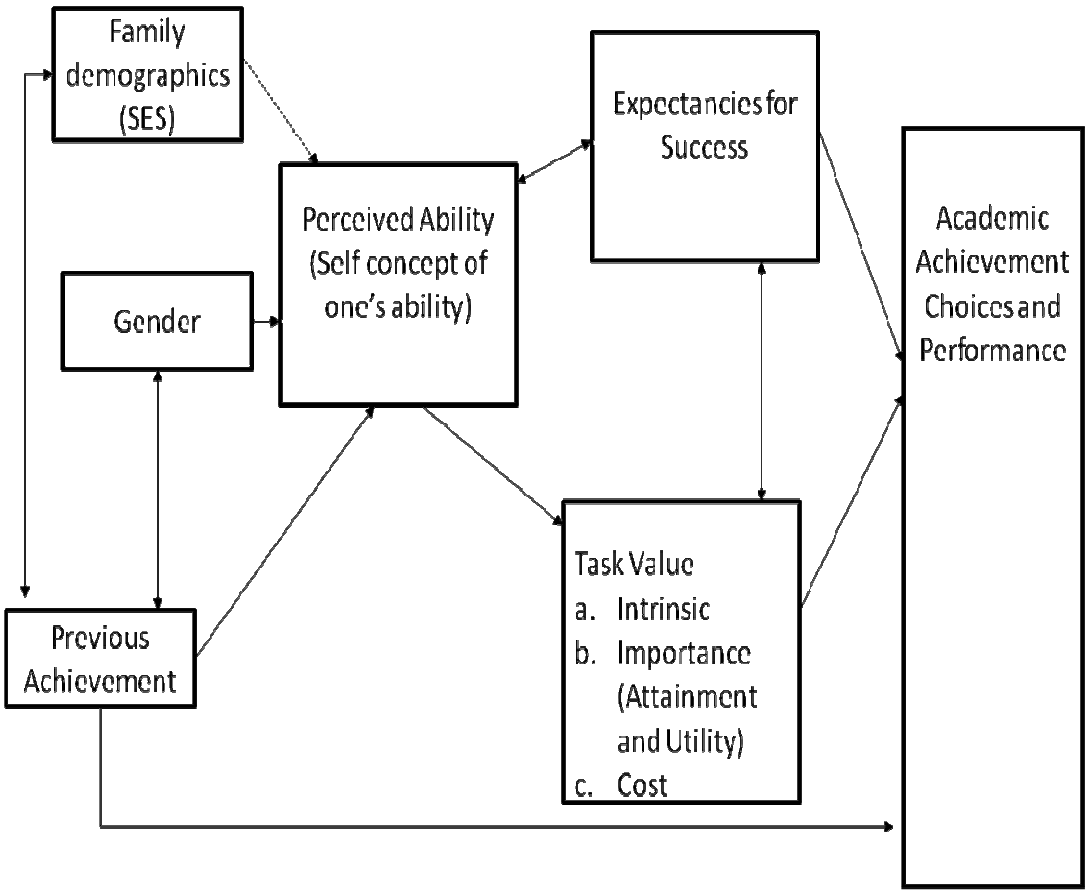


Figure 2. Relationships among the six major theories of motivation.

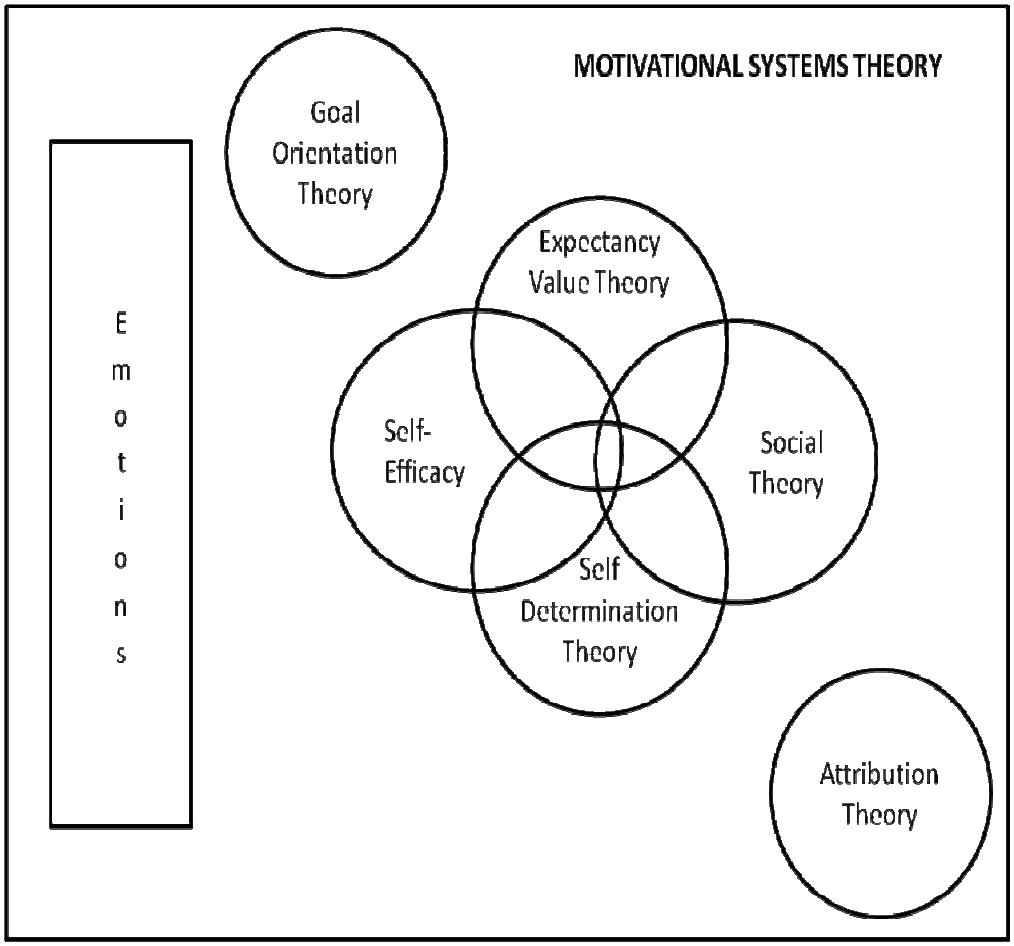


Figure 3. *Hypothesized structural model with measurement portion for confirmatory path analysis for the constructs of the expectancy value model of motivation for African American students with and without learning disabilities.*

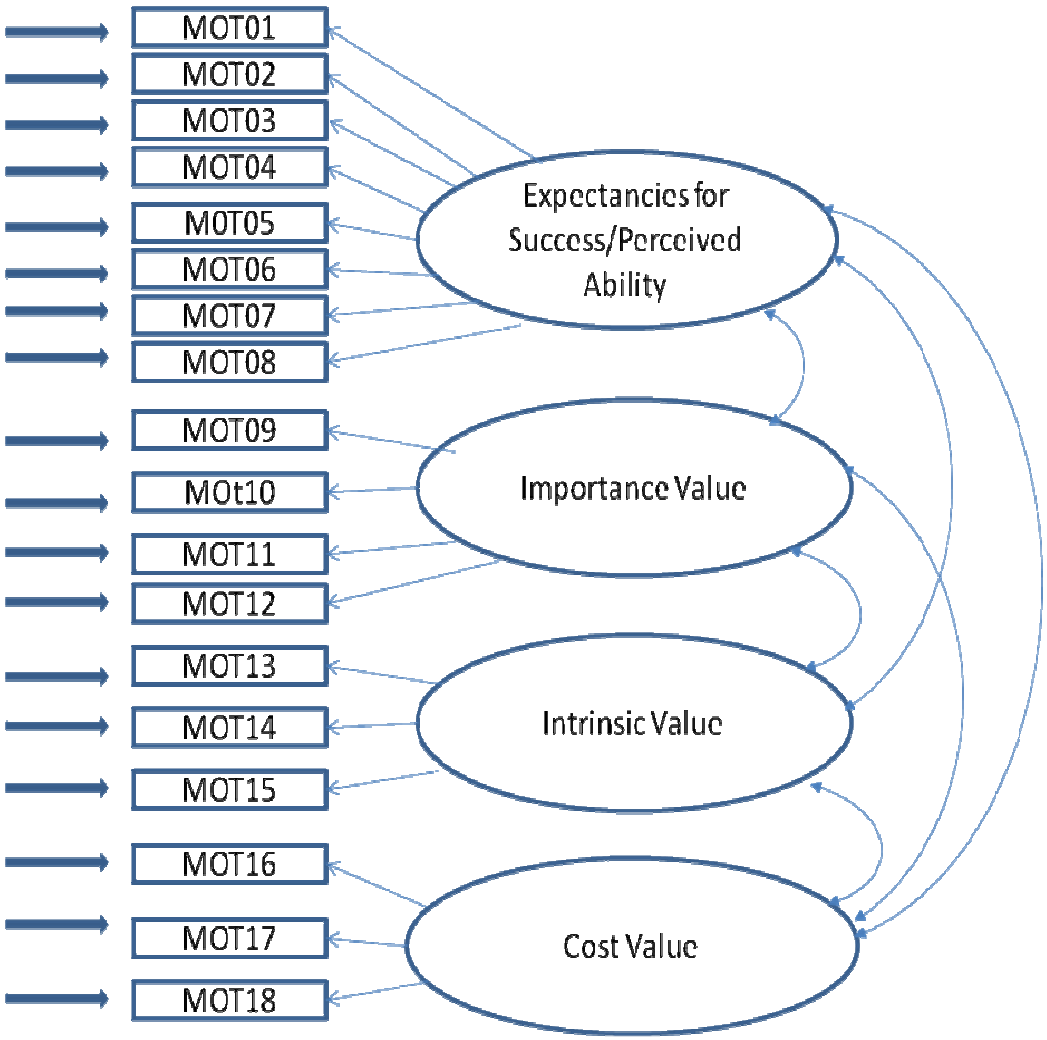


Figure 4. *Hypothesized structural model for research question 2 of the constructs of the expectancy-value model of motivation for African-American students for the reading dependent variable.*

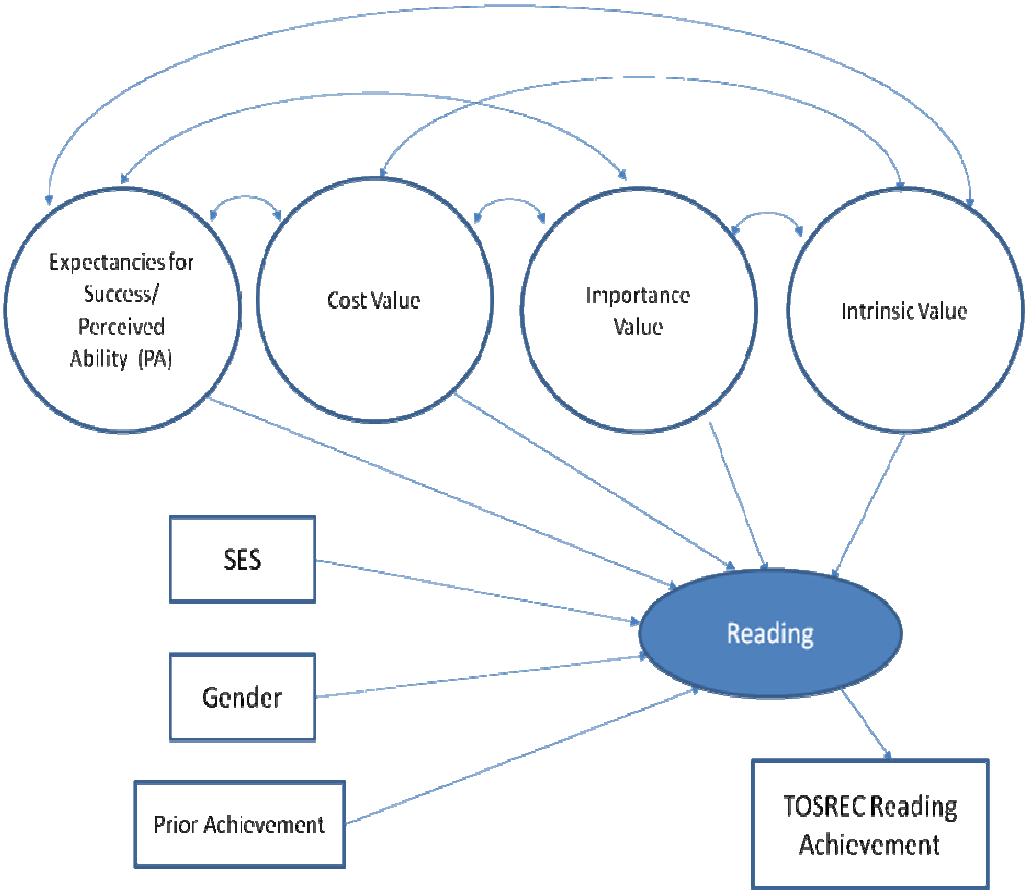


Figure 5. *Hypothesized structural model for research question 2 of the constructs of the expectancy-value model of motivation for African-American students for the reading dependent variable with the inclusion of the reading goal variable.*

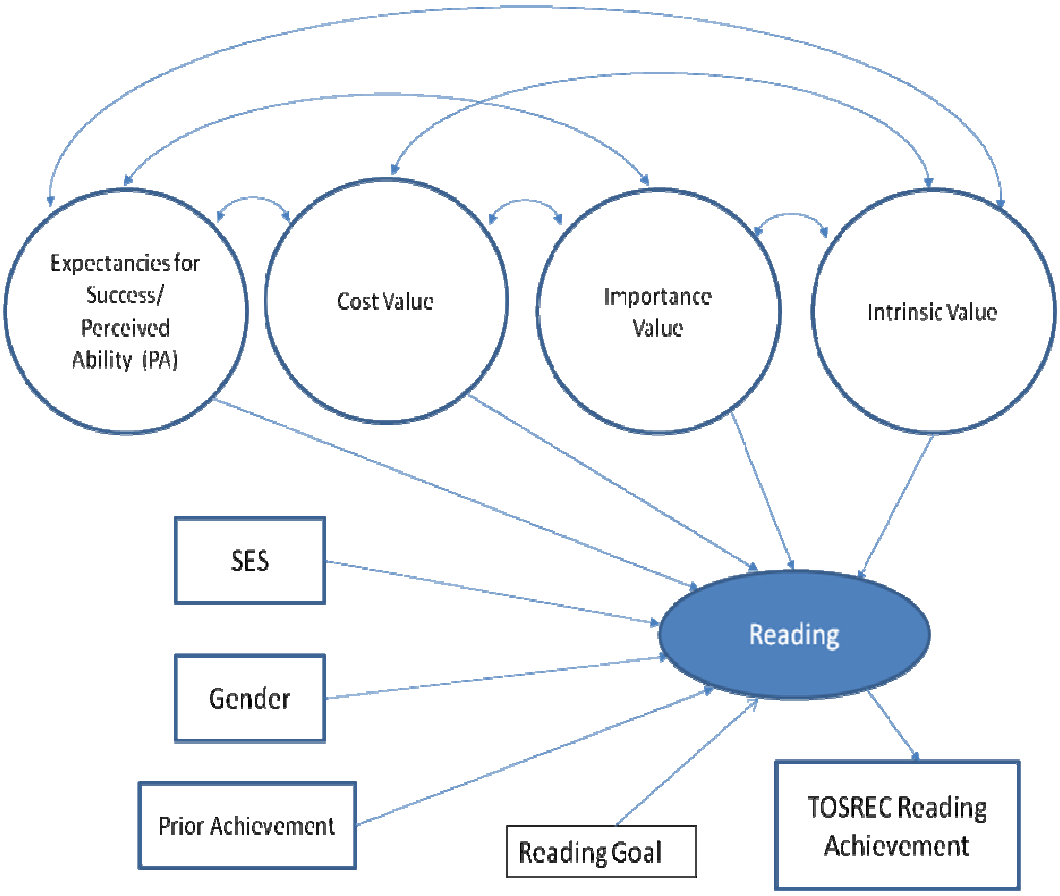


Figure 6. Hypothesized structural model with measurement portion for confirmatory path analysis for the constructs of enrollment intentions for African American students.

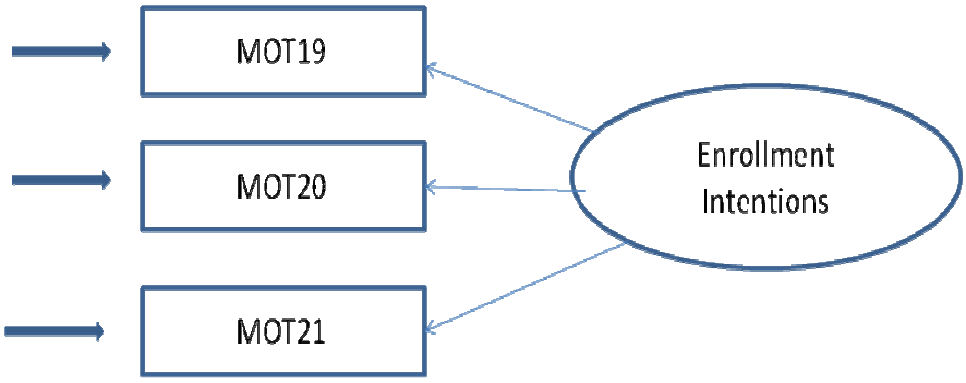


Figure 7a. *Hypothesized structural model for research question 2 of the constructs of the expectancy-value model of motivation for African-American students for the enrollment intentions variable.*

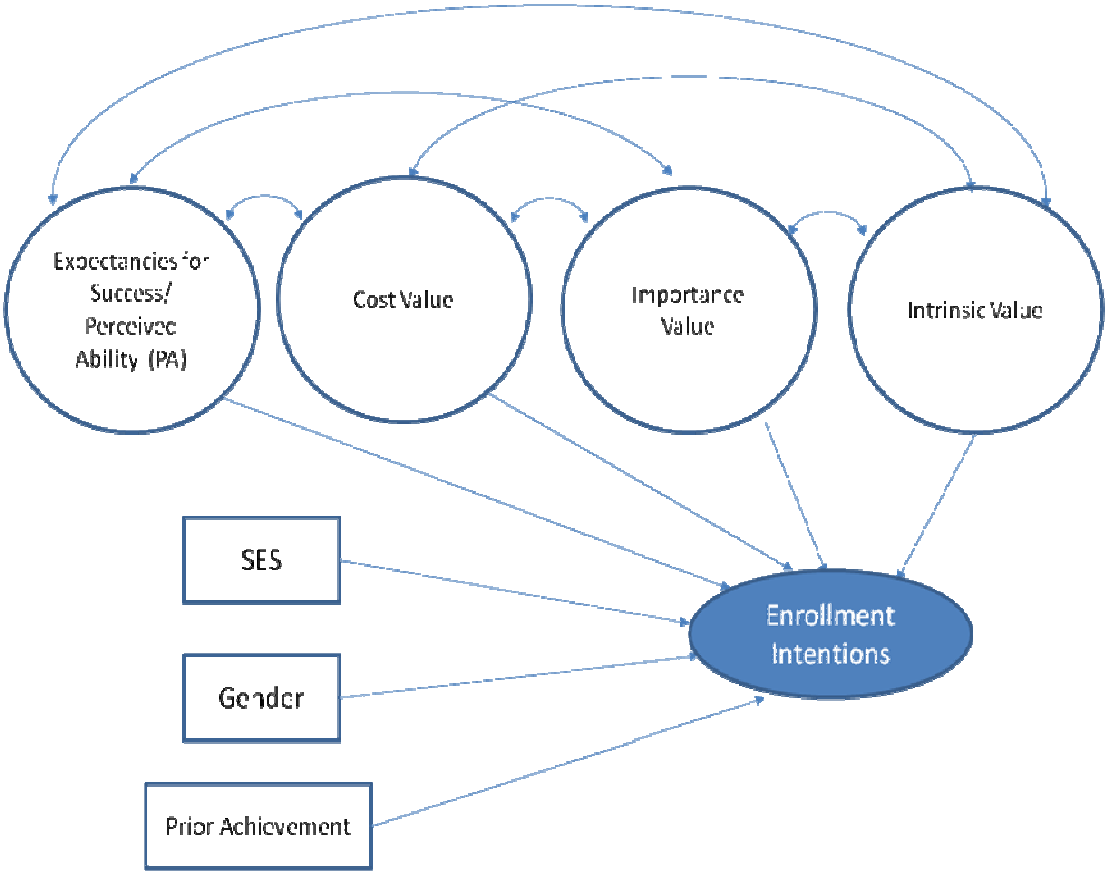


Figure 7b. Hypothesized structural model for research question 2 of the constructs of the expectancy-value model of motivation for African-American students with and without reading goals for the enrollment intentions variable.

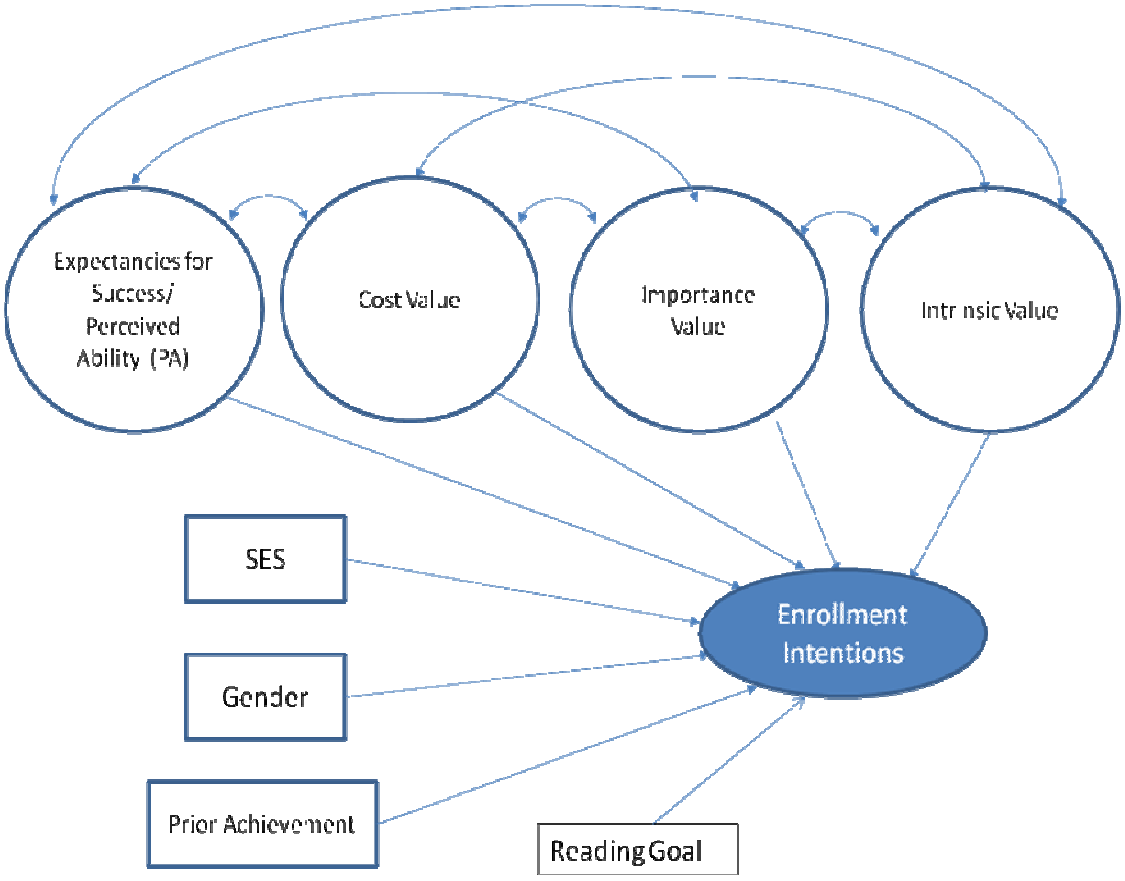


Figure 8. *CFA measurement model (not significant).*

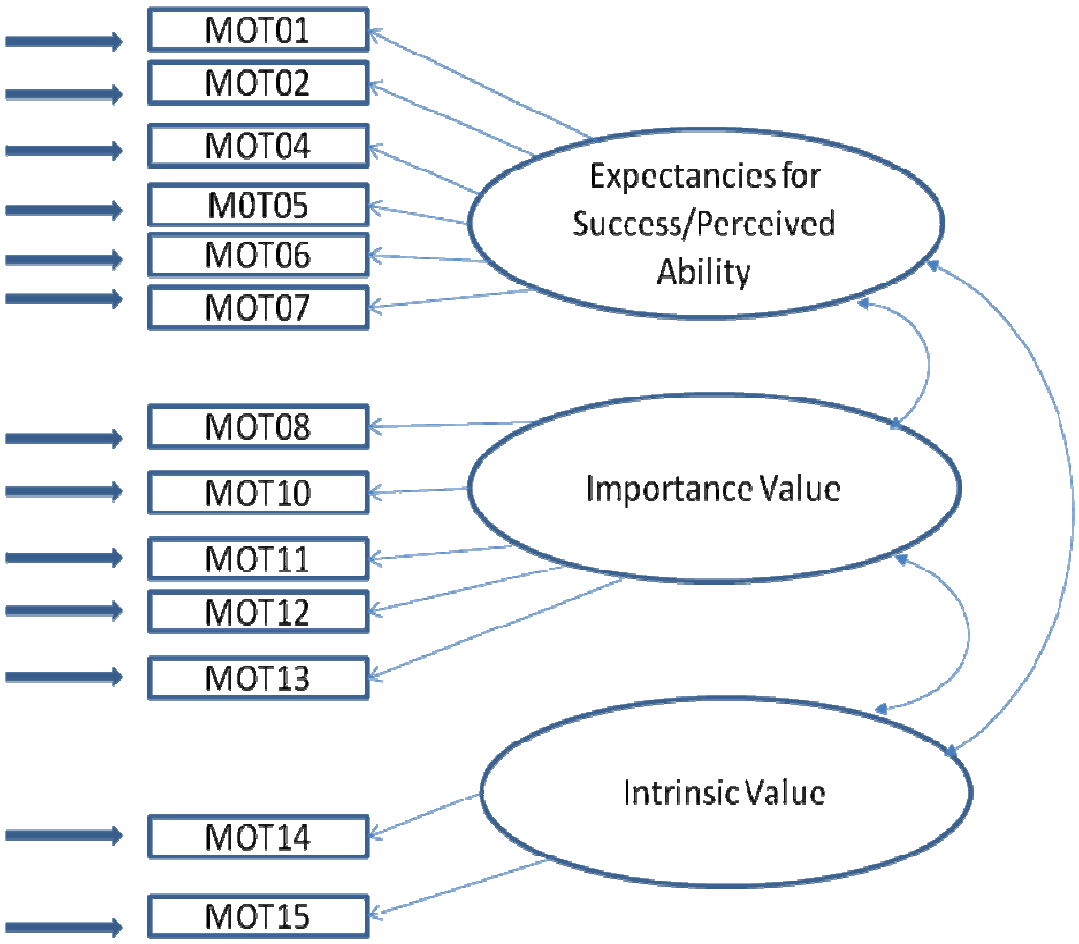


Figure 9. *Final measurement model of latent motivation factor models.*

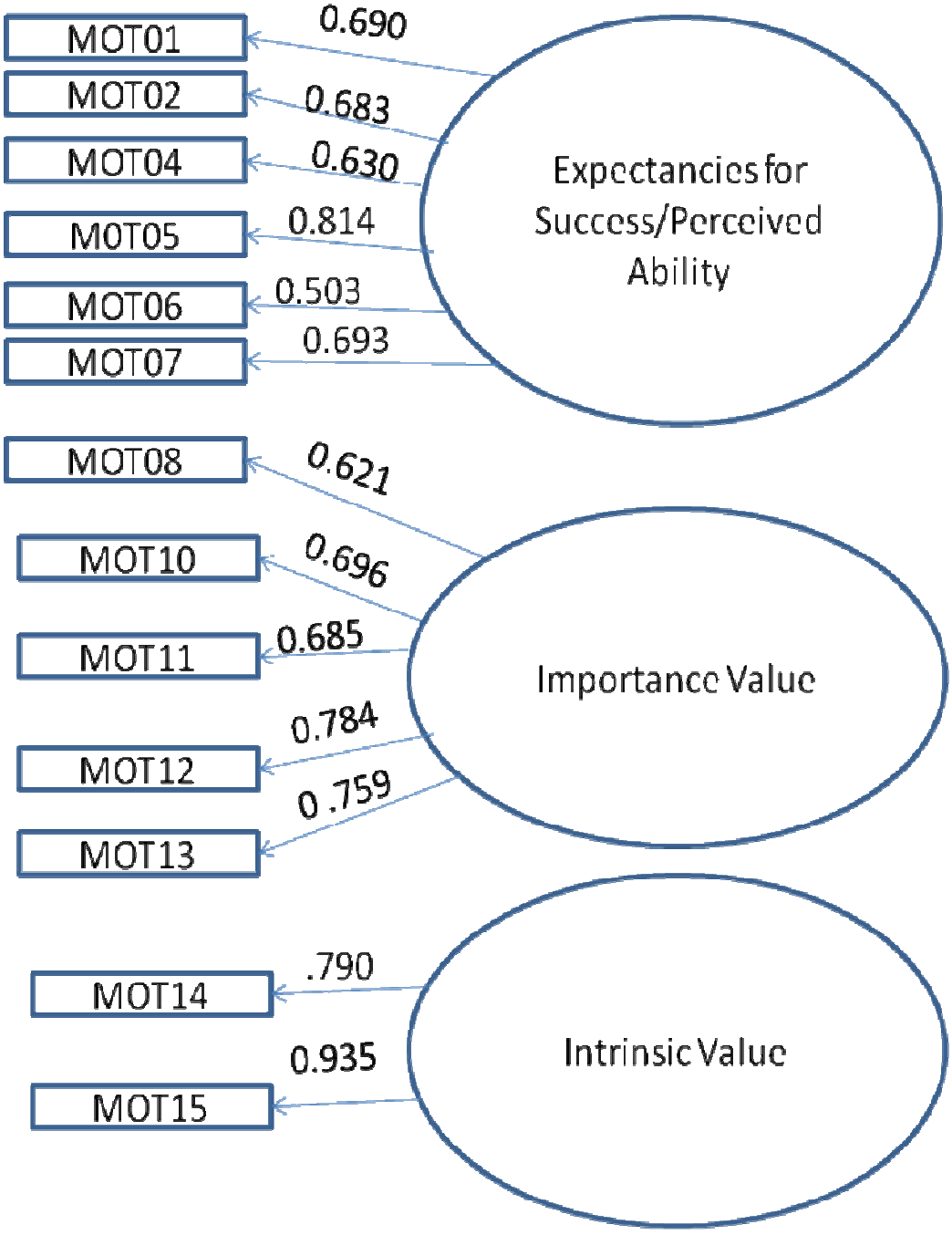
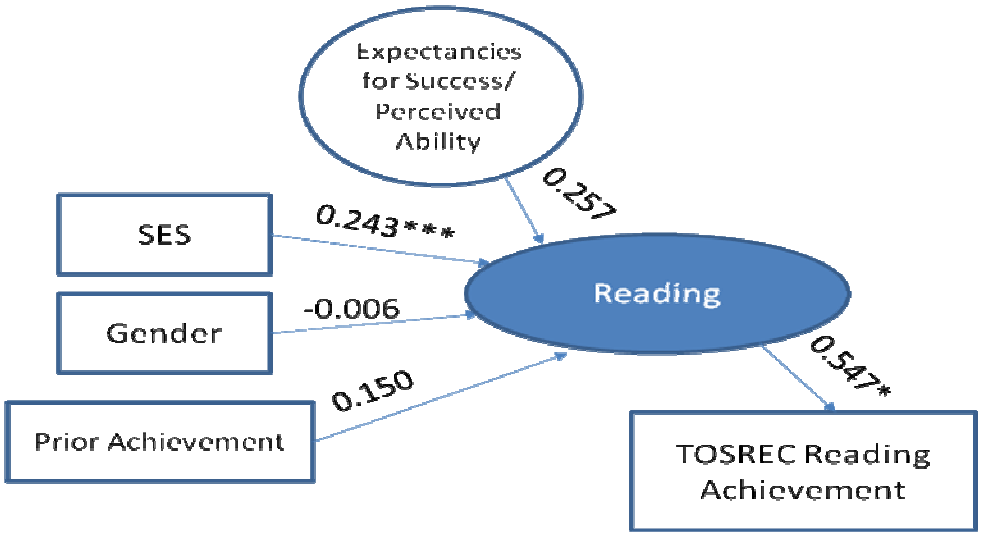
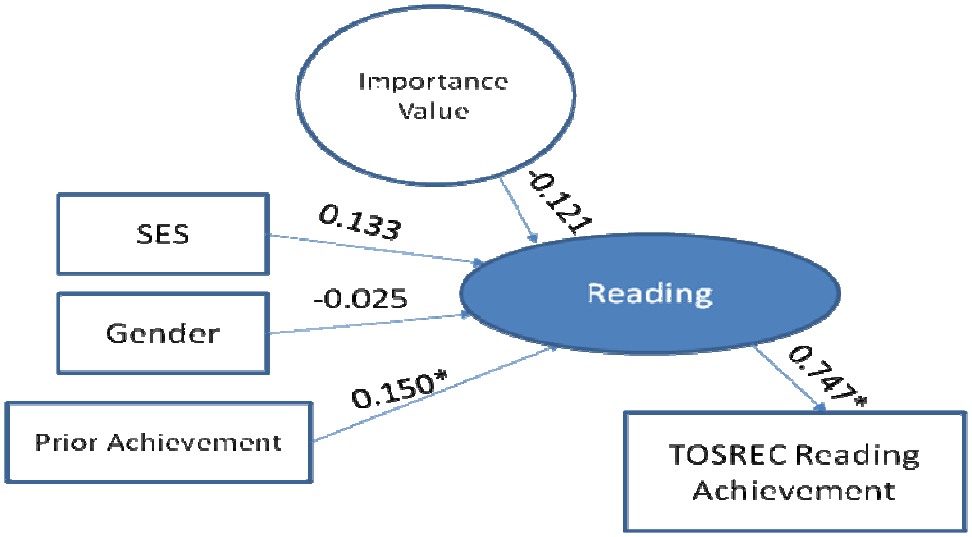


*Figure 10. Structural model with pathways for significant latent motivation factor models for research question 2 (without reading goal). *p < .001; **p < .05; *** p< .10*

A.



B.



C.

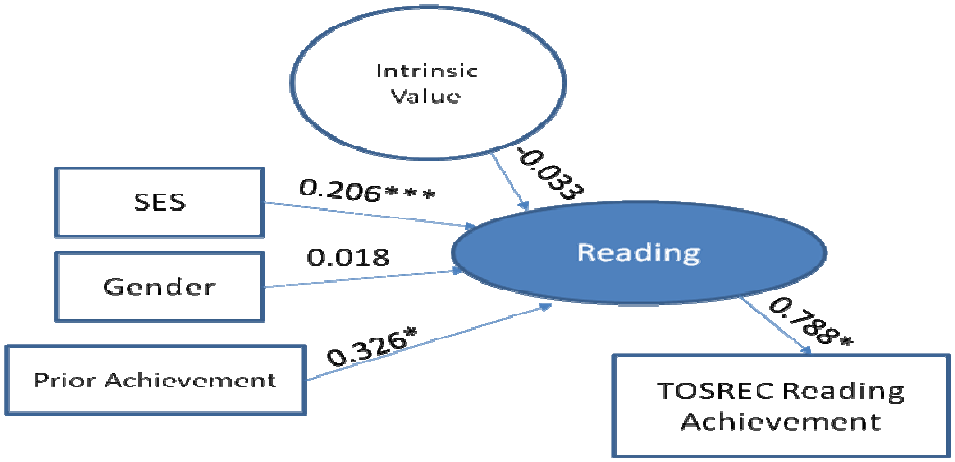
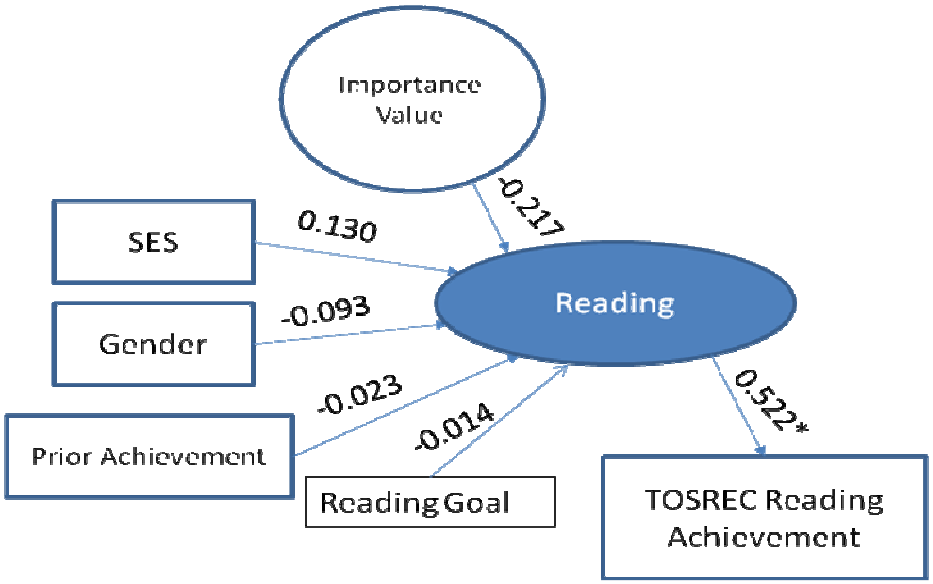


Figure 11. *Structural model with pathways for significant latent motivation factor models for research question 2 with reading goal. *p < .001; **p < .05; *** p< .10*

A.



B.

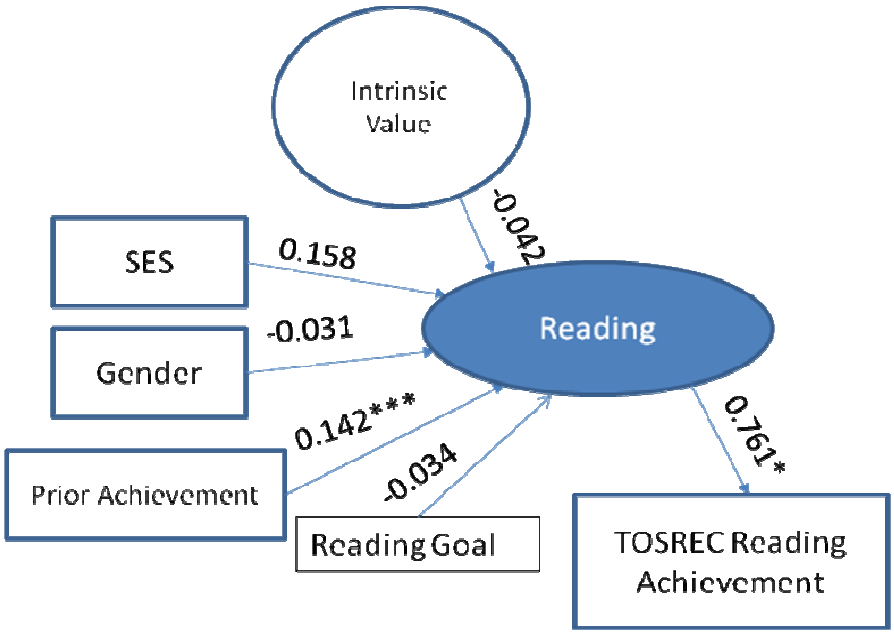


Figure 12. *Measurement model of the enrollment intentions dependent variable.*

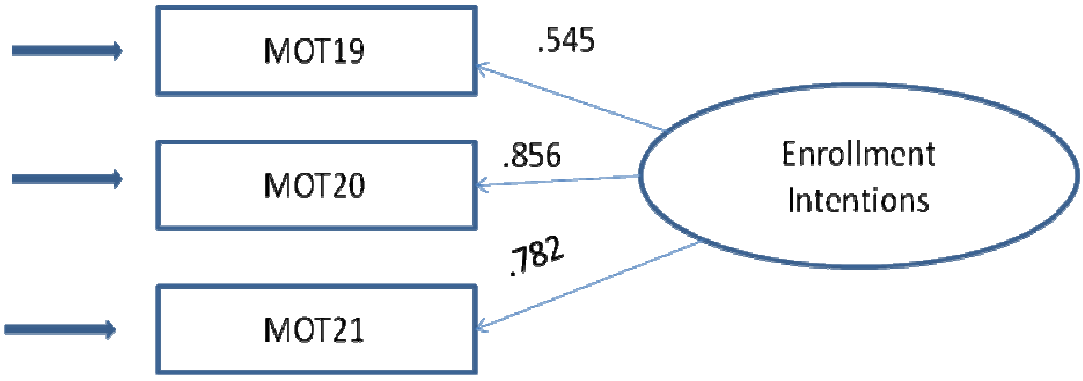
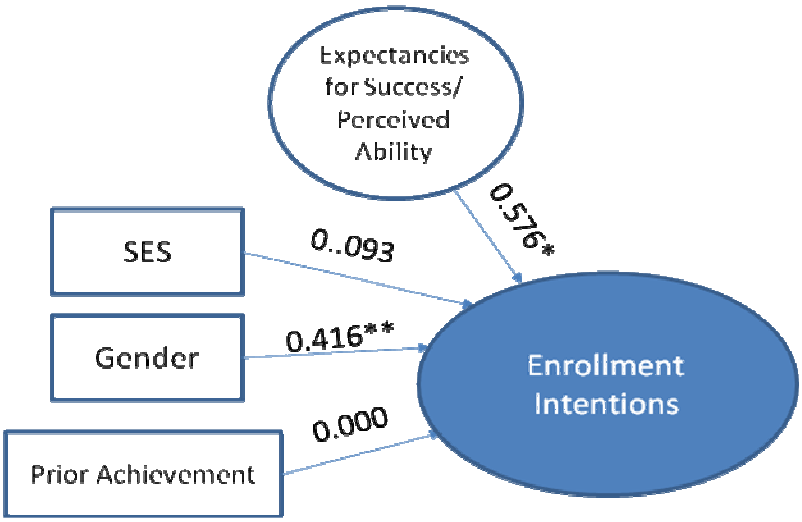
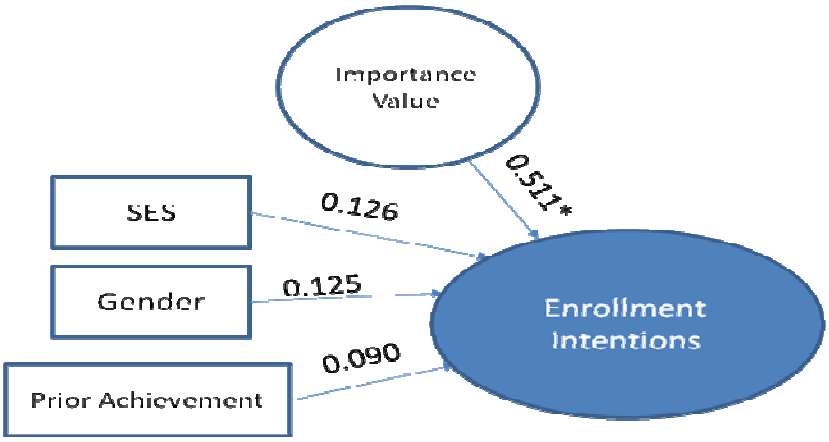


Figure 13. *Structural model with pathways for significant latent motivation factor models for research question 3 (without reading goal). *p < .001; **p < .05; *** p< .10*

A.



B.



C.

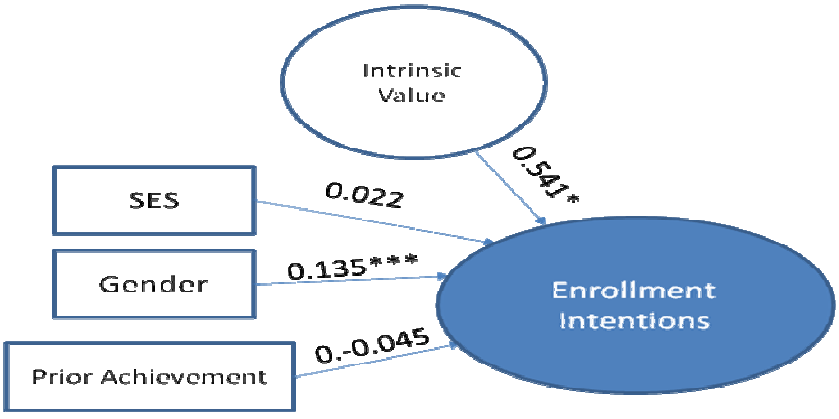
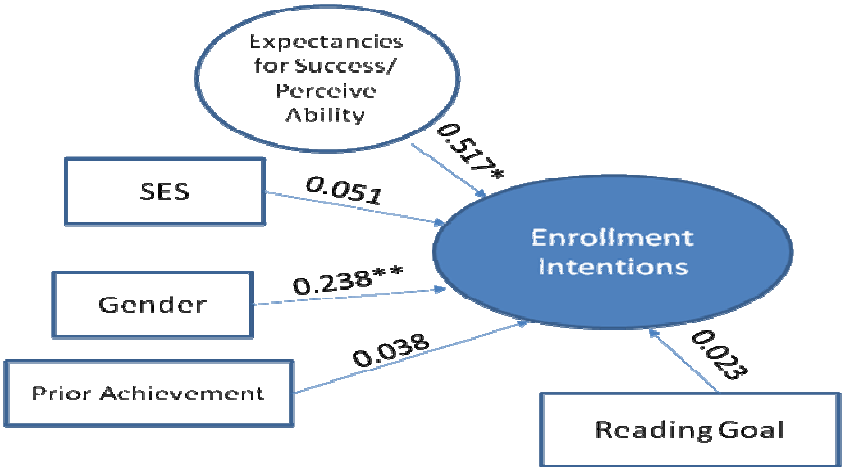
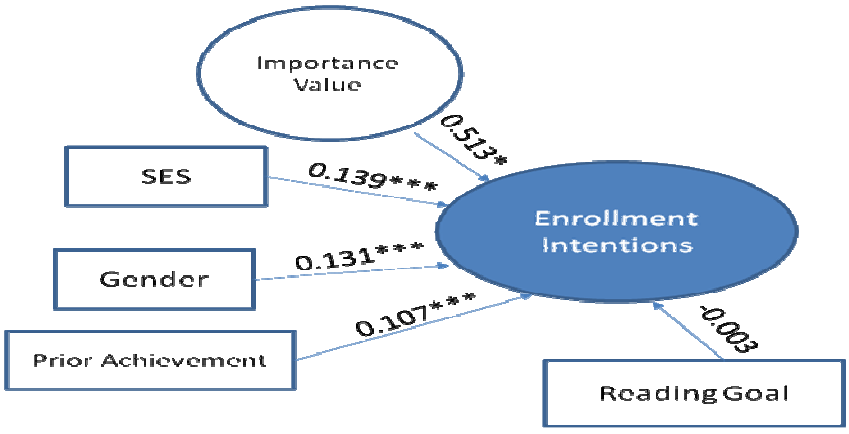


Figure 14. *Structural model with pathways for significant latent motivation factor models for research question 3 without reading goal variable. *p < .001; **p < .05; *** p< .10*

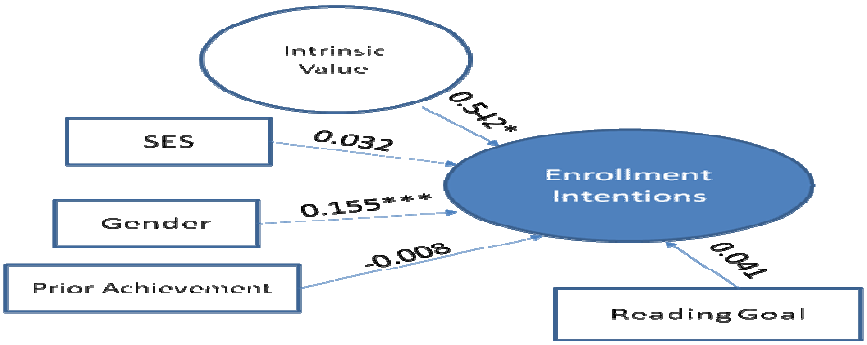
A.



B.



C.



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