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SOCIAL CONTEXTS, SELF, AND ADOLESCENT EXPECTATIONS OF SUCCESS IN THE VIEW OF THE BIOECOLOGICAL MODEL

By

PAULETTE F. DEL ROSSO

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ABSTRACT OF THE DISSERTATION

SOCIAL CONTEXTS, SELF, AND ADOLESCENT EXPECTATIONS OF SUCCESS IN THE VIEW OF THE BIOECOLOGICAL MODEL

By

PAULETTE F. DEL ROSSO

Dissertation Director:

Dr. Matthew Mayer

Current practices in education focus on academic achievement in order to prepare students for the important task of career pursuit. Students' ability to imagine their futures is important to realizing future goals. Social science researchers recognize the complexity of the multiple environments in which students function and the effects of those environments on future expectations. The Bronfenbrenner's (Bronfenbrenner & Ceci, 1994) bioecological systems theory portrays the influences of social contexts on development and learning. This dissertation used Bronfenbrenner's bioecological systems theory to test a model of adolescent expectations of success with multiple contextual influences (self constructs, parents, peers, school, and culture). Self-determination theory was used as an additional interpretive lens. Race/culture, socioeconomic status, gender, and age were used as controls.

This was a quantitative analysis that incorporated data from The Alfred P. Sloan Study of Youth and Social Development, 1992–1997 (United States) (Schneider, 2013), which asked adolescents vital questions about education, relationships, careers, and adult success. The dynamic relationship between these influences was explored through structural equation

modeling (SEM). Reliability and validity of latent constructs was examined and models were tested for invariance.

Research hypotheses addressed the predictive impact of contextual variables on adolescent expectations of future success. Mediation between self-esteem and social context variables was explored within models. Hypotheses also addressed the impact of demographics and age of cohort (young vs. old) on self and social context variables.

Results demonstrated that self-esteem had a positive relationship with expectations of success and with the social context variables of parent autonomy support, student teacher relationship, and peer shared values. It was demonstrated that self-esteem also acted as a mediator for parent autonomy support, student teacher relationship, and peer shared values in their positive impact on adolescent expectations of success.

The models that were specified and tested gave insight into the relative contributions of the various influences on expectations of success and the relative sources of future goal formation in the adolescent academic and social world. These results provide insight for school programming, school counseling, teacher education, and parent and teacher supports towards the building of productive relationships with adolescents.

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Dedication

The Ph.D. program along with this dissertation has been a truly joint effort involving many family and friends. My children, Tom, Charlotte, and Amelia, have been incredibly sweet and motivating during this journey. It has progressed through many of their high school and most of their college years. Somehow, we made time for each other. Their words of encouragement and their sharing their pride in me have been a whole other reward. I am, in turn, incredibly proud of them for all of the accomplishments and life goals they have managed. And thank you to their wonderful partners, my daughter-in-law Shelby, and my future son-in-law, Al. They have also understood, at times, when I needed to be attached to a computer. I hope this new stage gives us all more time to share together. I especially look forward to time with my new granddaughter, Victoria. We will be making music together!

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CHAPTER I: Introduction

This study addresses the topic of adolescent expectations of success. It is an especially crucial construct during adolescence because of the imminent and essential need to learn and prepare for one's adult future. We must better understand the mechanisms underlying expectations of success in adolescents so that we may understand the variables that have impact and might be worthy of further analysis towards optimizing the academic, social, and psychological growth of our youth. This dissertation will use Bronfenbrenner's (Bronfenbrenner & Ceci, 1994) bioecological systems theory to test a model of adolescent expectations of success with multiple contextual influences (self, parents, peers, school, and culture) that have been demonstrated to influence expectations of success in adolescents. The purpose of this study is to create a comprehensive model of adolescent expectations for the future in order to examine the relative impact of contextual factors that may inform new research as well as useful avenues of educational reform, if needed.

This is a quantitative analysis that incorporates data from The Alfred P. Sloan Study of Youth and Social Development, 1992–1997 (United States) (Schneider, 2013). Adolescent expectations of success will be looked at through the lens of the bioecological systems theory (Bronfenbrenner & Ceci, 1994), which helps to view the individual in the many contexts in which they travel: family, community, peers, school, and career. These contexts are further influenced by individual self-knowledge, beliefs, skills, and society and culture at large (Schneider & Stevenson, 2000). This chapter is an overview of the models in this analysis and the constructs and theory that support them in order to shed light on the importance of social context to adolescent development and preparation for adult demands.

The Sloan Study examined the family, peer, and school experiences of adolescents and

asked vital questions about education, relationships, careers, and adult success. Its objectives included how to better understand the adolescent experience surrounding career plans and aspirations and the influence of three major social environments: families, peers, and schools. This analysis will utilize that study's survey questionnaire data from adolescents across the nation in regard to their future expectations, competency beliefs, and social relationships. The dynamic relationships among these influences are best represented through structural equation modeling (SEM). Analysis via SEM using latent constructs incorporates the complexity and variety of a student's environment as related to expectations of success within the view of the bioecological model.

Expectations of Success

The concept of expectations of success used in the present study differs from other expectations, such as ability and outcome. Ability and outcome expectations are typically connected to achievement tasks focusing on direct connections between the nature of the ability (such as math skills) and the outcome (such as grade in algebra). These two expectations are usually described in the literature as directly connected to an academic domain (Eccles & Wigfield, 1995; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Eccles et al., 1983). The expectancy-value theory of motivation describes ability and outcome expectancies as one's perceived capability to succeed at a task (Wigfield & Eccles, 2002). The expectations of students in specific domains are related to perceptions of competence in those domains and are strong predictors of academic performance (Eccles et al., 1983).

Social-cognitive theory argues that ability expectations are linked to perceptions of self-efficacy and human agency (Bandura, 1986). Agency is an individual's contribution to causal action within an interactive environment that may contribute competency and motivational

feedback. Self-efficacy is a measure of competence in a specific domain and has influence on the outcome expectation to succeed or fail at a specific task. Social cognitive theory sees self-efficacy as a core self-system construct and predictive of effort and persistence in the face of obstacles (Bandura, 1977). Bandura differentiates between efficacy expectations, which are measures of perceived ability, and outcome expectations, which are measures of adequate choice of a particular action. Efficacy expectations influence behavior as they represent the belief that one can successfully execute a behavior towards a particular outcome. Outcome expectations reflect an individual's belief that a certain course of action will lead to a desired outcome. Self-efficacy expectations have four main sources: performance accomplishments from past experiences, which is the most typical way individuals gather expectancy information; vicarious experience, as in observing mastery modeling of a task; verbal persuasion as in feedback on ability from a significant other, which is most useful if coupled with mastery experiences; and emotional arousal, such as anxiety level, which is a source of information about one's perceived ability to handle a task (Bandura, 1977). The above examples of expectations are focused on specific achievement tasks as in subject domains of school or other areas where performance might be is measured, such as visual or performing arts and sport domains.

This view of achievement task expectation (a child's belief in how well they will perform on an upcoming school-related task) (Wigfield & Eccles, 2002) is linked to skill areas, although there may be additional self-related influences at play. The focus of the present research is not on the expectations of skills in a particular subject domain. It is on expectations of the future. The present study looks at the influence of social contexts on the expectations of future success within broad measures in education, career and life satisfaction. These contexts of adult life are articulated by young and old adolescents in structured interviews about their hopes and fears of

the future (Nurmi, 1989a). Career, education, stability of home and family life and activities related to life satisfaction are the most common topics on the minds of adolescent concerns for adult life.

Expectations of future success is a complex concept rooted in elements of self (Nurmi, 1991) and affected by one's socio-cultural perspective (Corra, Carter, & Carter, 2011). Expectations of success is often seen within the umbrella term "time perspective" with three domains: future orientation (a positive or negative outlook of success), future extension (a temporal measure of foresight), and total extension (a temporal measure that includes consideration of antecedents and consequences) (Agarwal, Tripathi, & Srivastava, 1983). A young child's future perspective may extend only a few years while an adolescent may project their future self well into adulthood and view it in terms of the roles or circumstance they expect, which, in turn, are often reflective of their culture (Nurmi, 1987, 1989a).

The variety of terms for future expectations in the literature share the principle that expectations of success is a dynamic concept with roots in the self-system that guide behavioral regulation and motivation. Nurmi (1991) describes future expectations as "the human ability to anticipate future events, give them personal meaning, and to operate with them mentally" (p. 4). Husman and Lens (1999) explored the connection of a student's perception of utility with the development of intrinsic interest in learning. They defined future time perspective (FTP) as "the degree to which and the way in which the chronological future is integrated into the present life-space of an individual through motivational goal-setting processes" (p. 114). Goal-oriented behavior is a key component of future expectations. The following is a review of self-system and social constructs that are noted in the literature to have a relationship with FTP.

Self-System and Social Contexts

Self-system. There is a large body of research to support the multiple influences on expectations of success that are a part of the phenomenological aspects of self-evaluation and the social contexts of the adolescent. Constructs used in this analysis that represent the self-system in the model include Behavioral regulation,

> […the primarily volitional cognitive and behavioral processes through which an individual maintains levels of emotional, motivational, and cognitive arousal that are conducive to positive adjustment and adaptation, as reflected in positive social relationships, productivity, achievement, and a positive sense of self (Blair & Diamond, 2008, p. 900)],

self-esteem (a sense of worthiness developed through the interplay of social and environmental interaction) (Bandura, 1986), Locus of control (the ascription of achievement outcomes to internal and controllable causes [ability and effort] or external and uncontrollable causes [chance or luck]) (Rotter, 1966), and Valued future goals (important personal aspirations that provide incentive for action) (Miller & Brickman, 2004a). Tables A4–A7, pp. 185–186, contain possible indicator variables for self-system constructs.

Parents. Constructs related to parents include autonomy support (allow input into decision-making and acknowledgement of individual viewpoint) (Deci et al., 2001), school involvement (interaction with schools towards the child's success including volunteering and teacher communication) (Hill et al., 2004), and communication (demonstrating interest in school activities and progress through discussion) (Fan & Chen, 2001) and supervision (knowledge and concern of a child's activities and location) (Herman, Dornbusch, Herron, & Herting, 1997). Tables A8–A11, pp. 187–188, contain possible indicator variables for parent related constructs.

School. Constructs related to school influences are School climate (a perceived supportive environment with fair rules and school spirit) (Coker & Borders, 2001; Simons-Morton & Crump, 2003), Student-teacher relationship (a measure on a continuum of closeness vs. conflict) (Ladd & Burgess, 1999), and Perceived challenge (typically encompassing amount of work expected to prepare for class and effectiveness of teaching/learning process) (Payne, Kleine, Purcell, & Carter, 2005). Tables A12–A14, pp. 188–189, contain possible indicator variables for school related constructs.

Peers. As students enter adolescence the peer group becomes an increasingly more salient comparative group as supported by typical school practices of ability grouping and comparative evaluation (Eccles, Midgley, et al., 1993). Peers that are academically focused (academic goals are important) act as models of behavior towards realizing achievement goals (Goodenow & Grady, 1993) versus peers that are socially focused (popularity and socially active behavior is important). Tables A15–A16, p. 189, contain possible indicator variables for Peer-shared values.

Socioeconomic Status, Race/Ethnicity and Gender

Constructs related to culture include race/ethnicity, socioeconomic class, and gender. Fouad and Brown (2000) discuss how race and socioeconomic class are linked and deeply influence personal and social self-perceptions that in turn influence development. Members of higher socioeconomic class have demonstrated an extension of future expectations further into the future (Nurmi, 1987). Socioeconomic class denotes inherent differences in physical advantages (housing, food availability, economic sufficiency) and experiential advantages (education, travel, recreation). Deprivation in experiential advantages was found to significantly relate to negative future orientation (Agarwal et al., 1983). This experiential advantage is again

seen in coursework enrollment. Socioeconomic class initially demonstrated high negative correlation with academic achievement in each of six high school subject domains (mathematics, science, vocabulary, reading, writing, and civics). But when controls for school track and coursework were included the effect of socioeconomic class became statistically insignificant. The true disadvantage for lower socioeconomic class students was reduced enrollment in college track and advanced academic courses (Gamoran, 1987).

Low socioeconomic status (SES) has been associated with disproportionate future orientation of aspiration as compared to expectations in middle school students (Boxer, Edwards-Leeper, Goldstein, Musher-Eizenman, & Dubow, 2003). Because agency involves a social and self-perception dynamic, individual student agency to seek aid for college preparation was strongly affected by a lack of knowledge about the college admission process and other post high school educational choices such as community colleges for low SES students (Deil-Amen & Tevis, 2010). This lack is seen as a reflection in the reduced social capital of low SES and minority groups who may also be first generation college entrants.

Other group differences reflective of the impact of sociocultural influences on future expectations involve differences between sexes. Most studies found interests to be stereotypically reflective of gender roles in their historical context. Lamm, Schmidt, and Trommsdorff (1976) found that gender roles seem to influence interests and knowledge about interests as well as differences in the temporal extension into the future. Boys were concerned with wealth accumulation and girls with marriage and family. Girls' hopes for future family were more structured than boys and boys' hopes for wealth were more structured than girls. This supports the inclusion of the controls of race, socioeconomic class, and gender in this analysis.

Effort and Expectations of Success

A mediating variable in this analysis is effort. Effort is one of several task engagement measures that are positively correlated with achievement behavior. Carbonaro describes effort as "the amount of time and energy that students expend in meeting the formal academic requirements established by their teacher and/or school" (2005, p. 28). He characterizes effort with three domains: rule-oriented, procedural, and intellectual. Rule-oriented effort is related to compliance such as adhering to attendance policies. Procedural effort is related to demands such as timely assignment completion. Intellectual effort is related to time and energy expended on the cognitive challenges of the curriculum. These elements make up the behavioral components of effort that are often goal-oriented and may vary among domains. Chapter 3 discusses the mediation process in more detail. Tables A2-A3, p. 185, contain possible indicator variables for Expectations of success and Effort.

This concludes the summary of self-system and social constructs focused on in this analysis. Their relationship to future expectations of success will be addressed in the following chapter. The remainder of this chapter will discuss the importance of expectations of success in the development of the adolescent, as well as in the larger consideration of educational practice. An overview of the bioecological systems theory will be given in light of the adolescents' social world. Examples of possible indicator variables from the data for latent constructs will be offered. The chapter will conclude with a statement of the problem to be addressed and the research questions.

The Importance of Adolescent Expectations of Success

Adolescent Expectations of Success and Optimal Development

This analysis will examine the impact of these multiple constructs from the broad social

world of the adolescent on Expectations of success. Future-oriented interest and planning is based in normative expectations and positioned within cultural and institutional contexts (Nurmi, 1991). Beliefs about the future as well as planning for the future are learned within social context through life events, action opportunities, and standards for evaluation. These elements are acted upon via cognitive schemata that allow for anticipation of the future, provide knowledge about the future and include the influence of the self-concept. These interactive elements provide the resources for motivation, planning and evaluation inherent in future orientation.

Nurmi (1991) isolates three key areas that highlight the importance of future expectations for adolescents. First, significant socializers (parents, teachers, and peers) communicate normative age-specific tasks for adolescents that stress consideration of the future. Second, these thoughts lead to fundamental decision-making about adult life. Last, thoughts about the future contribute to identity formation. Identity construction involves meaning making through the integration of how past experience has affected the self in the present (Habermas & Bluck, 2000). This is an important task through out life and a major psychosocial task of adolescence (Erikson, 1994). Identify development is enacted when adolescents think about the future, set goals, and realize them. This demonstrates that adolescent expectation of success is an indicator of optimal development. It is an important element of growth and can vitally contribute to individual futures. The influences on Expectations of success should be studied so that we may understand the nature and need for prevention and, if necessary, intervention.

Educational Reforms and Current Job Market Demands

Educational reforms have been put in place over many decades that may not have considered the multiple social worlds of the student. The United States' education system has

put a great deal of focus on achievement related behavior in order that secondary school students will be college ready for the 21st century workforce. Many resources have been directed towards federal and state initiatives over the decades to assess quality and consistency in elementary and secondary education, including the American Diploma Project ("ADP Network," 2012), No Child Left Behind (NCLB), which evolved into the Every Student Succeeds Act ("FACT SHEET," 2015), Common Core (Porter, McMaken, Hwang, & Yang, 2011), and Race to the Top ("Race to the Top Fund," 2015). The U.S. places a high priority on measuring and improving the academic achievement of its young people, recognizing academic success as an important function of the school system and reaffirming the significant role of the government towards that end.

Academic success and students' individual aspiration toward their future success are connected to the demands of the job market, especially with regard to required skill sets. Several research-oriented consortia, funded by corporate leaders in the technology and service sectors, surveyed four hundred thirty-one employers representing over 2 million U.S. based employees (Casner-Lotto & Barrington, 2006), examining skill set demands of 21st century employers. The respondents represented manufacturing (22 percent), business and professional services (13.9 percent), financial and insurance services (13.6 percent), health care companies (12.2 percent), and entertainment and trade companies (10.1 percent). Many consistencies in the types of skills and knowledge employers want at a variety of entry-level positions for high school, two-year college and four-year college graduates were revealed.

Besides basic skills in the common subject domains (reading, English language, writing, and mathematics) valued skills for new employees include critical thinking and problem solving, communication, and collaboration in the top three out of eleven skills ranked by employers. In

addition, professionalism/work ethic was included in the top five. Written communication was also in the top eleven skills and its ranking by employers rose in tandem with level of education. These skills were reiterated in a National Education Association publication calling for teachers to utilize the "4 C's" (critical thinking/ problem solving, communication, collaboration, creativity/innovation) to engage and prepare students for a global society (National Education Association, 2010). In the employer survey, creativity was also a valued skill at all levels in the lower half of the top 11 skills ranked (Casner-Lotto & Barrington, 2006). These requirements place a demand on schools to educate students in more than subject matter. Such applied aptitudes are also social-emotional, behavioral, and cognitive in nature. These proficiencies are seen as essential developmental foci beginning in the early childhood years as they prepare children with the social competence and autonomy that are needed for life and career success (Siraj-Blatchford, 2007). The broader demands of the job market discussed above are reflected in the competencies and relationships in the present study. The foci of this analysis isolate the capacities of the self and the elements of the social world that may impact them in order to better understand the relationships between them.

Educational Reforms in Consideration of Expectations of Success

There have been ongoing debates on the preparation of the current generation for life outside the classroom. School reforms of the past have been polarized in their emphasis of achievement scores vs. social-emotional and behavioral growth. Furthermore, programming that does emphasize school-based prevention and youth development interventions are often short-term and not well coordinated (Greenberg et al., 2003). Larger educational reforms, as mentioned previously, tend to be focused singularly on teacher actions and behavior and/or a curriculum focus, In recent years, this has been manifested by concentration on measurable

outcomes in relation to teacher projected growth objectives for students ("AchieveNJ: Teacher Evaluation," n.d.; "APPR Plans : Great Teachers and Leaders : Race to the Top : NYSED," n.d.). While these educational reform efforts had the noble goal of increasing students skills and encouraging challenging academic and post-secondary pursuits, they do not address the needed social-emotional environment that is most conducive for learning (Greenberg et al., 2003).

The self-system and social-world perceptions that this analysis will utilize have implications for the development of FTP. They are measures of the social-emotional experiences of adolescents. There has been discussion with regard to the nature of adolescent expectations of success, its importance in developmental growth and in the consideration of educational structures. In the next section I discuss a model of adolescent expectations of success that incorporates the many influences of social and cultural contexts and how the model is best represented through SEM.

Theoretical Considerations

Bronfenbrenner's Bioecological Model

Much of the existing literature on expectations of future success has investigated connections to self-system constructs, social relationships and goal-oriented behavior. The present theoretical model of adolescent expectations of success is conceived in the framework of the bioecological model (Bronfenbrenner & Ceci, 1994) by joining competency and regulatory measures with the impact of social relationships in an effort to explore if and how such social relationships influence the self on future expectations.

Human beings develop as a function of many contexts throughout their life span. These contexts are a nested view of the physical, social and cultural world (Bronfenbrenner, 1977). The microsystem incorporates the most immediate settings such as home, school and the

workplace characterized by face-to-face interpersonal relations such as between parent and child. The mesosystem is the space where such immediate settings may interact such as parenting behavior impacting academic achievement. The exosystem is a further extension of the individual's environment to larger, formal, and informal social structures, including neighborhoods, government and media, which influence individual experience without the necessity of the presence of the individual. This might include parents interacting with their child's peers in shared community activities. The macrosystem is the dominant culture or subculture that influences the previous systems. The macrosystem focuses on the process of adaptation between the individual and the environment via patterns of social structure such as a comparison of groups from different socioeconomic classes or from different cultures. The bioecological model is a nested view of all possible contexts of an individual or group and that have reciprocal relationships with each other (Bronfenbrenner, 1977; Bronfenbrenner & Morris, 2006). Bronfenbrenner (1994) later expanded this view to include the chronosystem that considers the individual in terms of the passage of time. This may include but is not limited to changing roles, life paths, contexts, and/or the impact of larger historical change.

In this proposed dissertation, I will examine a model of the influences on adolescent expectations of success that considers Process-Person-Context-Time elements of the bioecological model. The model consists of adolescent self-system constructs of competency and actions, their viewpoint of relationships with parents peers, and school with consideration of the macrosystem of class, ethnicity and culture (Bronfenbrenner, 1995). Process in this analysis is represented through the direct and indirect relationships towards the outcome of expectations of success. The students' psychological aspects of self represent the person component. Contexts are student self-perceptions of the many environments in which they function including

home and parents, peer group, and school as well as the larger culture and society that influence those nested structures. Time is seen as a longitudinal view of the person within their environment with regard to the impact of past influences on future development. With the addition of the time component questions can be asked about the measure of expectations of success over different developmental stages in adolescent life. The current study focuses on cross-sectional dynamics and hypotheses. Longitudinal analyses are currently beyond the scope of this research project because the cross-sectional dynamics between these constructs must first be investigated. The examination of the time component will be done through a group comparison. It is necessary to first untangle the relationships among the constructs through the lens of the bioecological model before any longitudinal work can be attempted. It would be more challenging theoretically to measure both changes in expectations of success (dependent variable) as well as simultaneous changes in the construct relationships (independent variables). In addition, the total sample of the Sloan Study is a mixture of longitudinal (focal groups, *see below*) and cross-sectional (cohort groups, *see below*) data to allow for attrition. These samples were combined to provide a larger sample size for analysis. It would be methodologically problematic and may be inappropriate at this time to perform a longitudinal analysis of the time component on such a combined sample. That analysis may be addressed in subsequent research.

Adolescent Expectations of success are a measure of future time perspective. Research has demonstrated its importance to preparation for adult life. The adolescent's social world, including family, peers, and school impacts the self and influence Behavioral regulation and motivation towards realizing Valued future goals. The impact of these important socializers in adolescent life helps to create future-oriented thinking, which leads to decisions that affect adult life and identity formation. These elements of the self and social world are the building blocks

of the conceptual models offered in the present inquiry. Accordingly, this analysis will use Bronfenbrenner's bioecological model to create and test the relative influence of predictors of expectations of success.

Use of SEM

An exploration of adolescent Expectations of success and education would involve the testing of the theoretical constructs proposed to influence adolescents' future perspective. A better understanding of the mechanisms that influence adolescent expectations of success would involve a systematic look at the dynamic aspects of their environment. This includes collected measures that focus on the influences of systems of self, parents, peers, school, and culture. Such data would include observations that form reliable and valid measures of latent constructs that have theoretical connections to environmental influences on adolescent perception and behavior. Analysis via SEM using such latent constructs incorporates the complexity and variety of a student's environment as proposed by the bioecological model.

Observed variables are used to build latent variables in SEM. Latent variables represent the properties of objects under consideration and the model represents the relationships between them (Bollen, 2002). A latent variable or construct is measured indirectly through observed variables within a given sample of the population. Academic achievement and graduation rates are two informative measures and are frequently used in studies of academic success and struggle (Finn, Gerber, & Boyd-Zaharias, 2005; Hernandez, 2011; McCallumore & Sparapani, 2010). There are many qualities that make up the classroom or school milieu that may not be as readily measured, such as self-esteem, ability beliefs, and educational expectations that are important in educational research (Khine, 2013; Liem & Martin, 2013). Such latent measures benefit from SEM methodology in that they allow researchers to make connections between both

internal and external experiences that may influence self-perceptions and/or behavior and are not just summary variables of accomplishments. The complex hypothesized relationships among latent variables in this analysis that influence expectations of success among adolescents are best served through SEM. Data that is made up of multiple question items of observed variables would not be analyzed efficiently singularly as in regression analysis. SEM offers a way to represent complex interrelationships in a more powerful analysis.

Data Source

The Alfred P. Sloan Study of Youth and Social Development, 1992–1997 (United States) (Schneider, 2013) examined the family, peer, and school experiences of adolescents and asked vital questions about education, relationships, careers, and future success. The respondents for this analysis were in grades 6-12. The data set is a mixture of longitudinal and cross-sectional observations.

The Sloan Study included various and important contexts of adolescent life in its survey, included but not limited to, aspects of life within the family, in school and with peers in order to capture adolescent needs and social realities. This analysis considers the construct of future orientation with its positive-negative continuum. It utilizes survey measures that ask the respondents to project themselves into the adult world of career and family. It looks at the potential influences on expectations of success within the adolescent system of self as well as within the adolescent social environment. This analysis will examine the data from the Sloan Study through an exploratory factor analysis (EFA) in order to uncover valid and reliable measures for use in a SEM in an effort to explain influences that impact adolescent expectations of success. The selection of questionnaire items for the EFA (see Tables A2–A16, pp. 185–189) was driven in part by the literature outlining the influences of social context on expectations of

success and the results of a pilot study by this researcher focusing on those relationships (Del Rosso, 2015).

The Problem

The current literature gives valuable insight into the relational constructs embedded in FTP that may influence expectations of success in adolescents. The student self-system, such as self-esteem, goal-oriented behavior, and perceived social relationships can have mutual impact on adolescent expectations of success. It is clearly acknowledged that these influences exist in various contexts. There is no existing model that examines the relational influences of these variables and contexts and their measured effects on expectations of success. A more complete understanding of the influences within and between contexts and across time would enable a more comprehensive view of adolescent future orientation. Specifically, social and behavioral competencies are measurable through observed elements of self-perception and behavior. These elements can be explored via factor analysis to develop strong latent constructs for use in SEM. Self-esteem, goal-oriented behavior and perceptions regarding social environments such as family, peer group, and school are valuable resources to inform the education community on their relative influences on adolescent expectations of success.

As stated, the present organizational measures of educational success tend to rely heavily on academic achievement levels. Yet, present day, 21st century employers are eager to find entry-level job candidates at all educational levels to be prepared with academic, social, and behavioral competencies. These competencies are an outgrowth of educational environments that feature supports to social and emotional growth in addition to academic preparation. The present research can shed light on the relative influences of adolescent expectations of success with impact on dropout prevention and the importance of social and behavioral components in

adolescent education. This could lead to successful post formal education choices and ultimate workplace placement and success.

A focus on adolescent Expectations of success gives a window into the extent that adolescents believe that their future goals will be realized. Future goals are an amalgam of personal value and knowledge about the world that are highly influenced through sociocultural contexts. This view supports the use of the Bronfenbrenner bioecological model to identify salient and influential variables and their possible relationships. Student perception of their abilities, social relationships and contexts are important influences to future goals and expectations. A detailed look at student self-perceptions and behavior and their relationship to each other and to expectations of success via a structural model can inform the realm of education on how to make schools better learning communities and how to best prepare adolescents for career success.

It would be optimal to formulate student self-system constructs that compose a dynamic view of the self as well as relationships with parents, peers, and teachers, and perceptions of school context. Data that allows for construct formation among various salient influences on adolescent expectations of success would be useful in creating a SEM. This model would address the problem of understanding the complex relationships within adolescent expectations of success.

Purpose of the Study

This study focuses on the topic of adolescent expectations of success in order to find the relative influence of adolescent self-perceptions, goal-oriented behavior, and social relationships on expectations of success so that the ways these variables might be incorporated into school and home structure and function might be further understood and examined. At this time social

science researchers agree that future expectations have a significant relationship with psychological aspects of the self and to students' perceived relationships with significant others that impact their everyday lives (Gerard & Booth, 2015; Wong, Parent, & Konishi, 2019). A positive and extended future outlook is associated with optimism and expectations of success. Stress-affected children have shown decreased resiliency and often express short term and/or pessimistic future outlooks. In addition, students' self-perceptions of competency for familiar and novel tasks are related positively to behavioral regulation and to future expectations. These self-perceptions play a role in goal formation and planning as well as coping with failure (Nurmi, 1991).

Students' ability to imagine possible future selves is important to realizing future goals. The ability to manage distal goals within a system of proximal goal development gives value to present day tasks. Social science researchers recognize the complexity of the multiple environments students' function in and their individual and interactional effects on future expectations. A model that gives insight into the relative contributions of the various influences on expectations of success would add to the current knowledge of the relative sources of future goal formation and of the adolescent academic and social world. In addition, detailed information of adolescent career expectations and how they align with adolescent future goals and planning would help to build responsive educational communities that truly prepare students for 21st century life. The hypotheses for this analysis are the beginning of the conceptualization of a series of models that depict influences on adolescent expectations of success. The models begin with consideration of the person and extend to microsystem and macrosystem components as well as developmental change between younger and older adolescents.

Research Hypotheses

Hypothesis1: Characteristics of the self-system (Self-esteem, Behavioral regulation, Valued future goals and Locus of control) predict perceived academic Effort, which mediates Expectations of success. (Figure 1, p. 21)

Hypothesis 2: Characteristics of parenting (Autonomy, School involvement, Communication and Supervision), school (Climate, Student-teacher relationship and perceived Challenge), and peers (Academic and Social focus) predict self-system constructs, which mediate perceived academic effort on expectations of success. (Figures 2-5, pp. 21–23)

Hypothesis 3: There is a potential impact of membership in a group that may offer societal advantage or disadvantage on the constructs specified in Hypotheses 1 and 2 as measured through the use of race/culture, socioeconomic status and gender as control variables.

Hypothesis 4: Age of cohort (younger vs. older) will demonstrate different relationships on the constructs specified in Hypotheses 1 and 2.

Appendix A (p. 184) includes tables depicting questionnaire items and key findings from the literature.

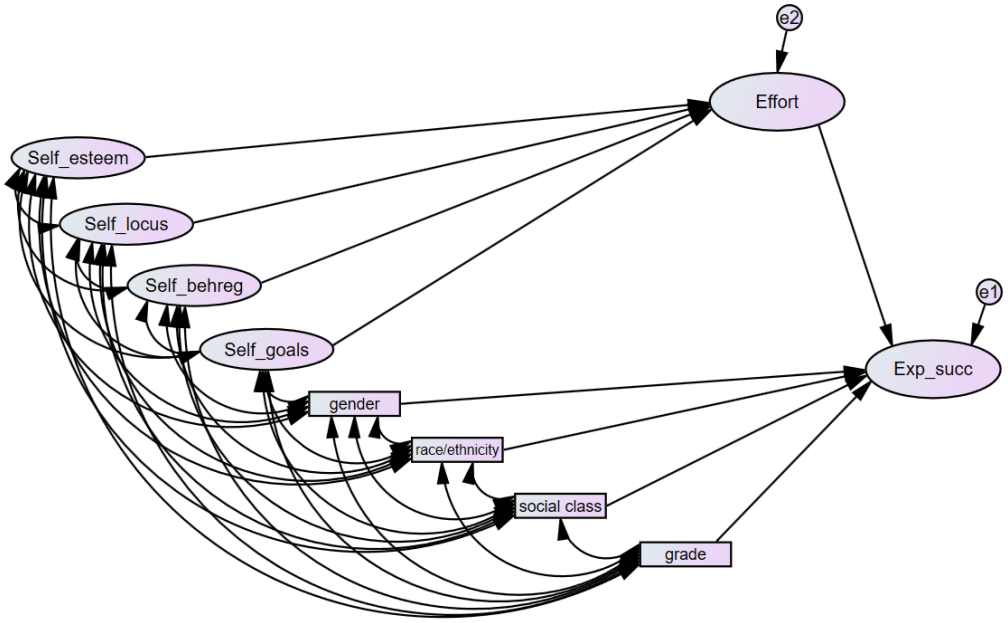

Figure 1. Hypothesized Model 1: The Self-System

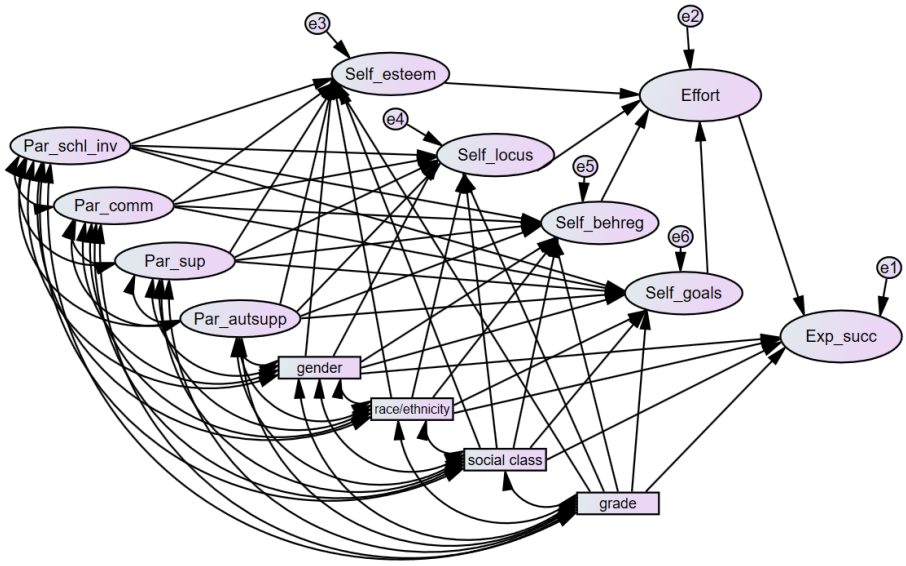

Figure 2. Hypothesized Model 2: The Self and Parent Systems.

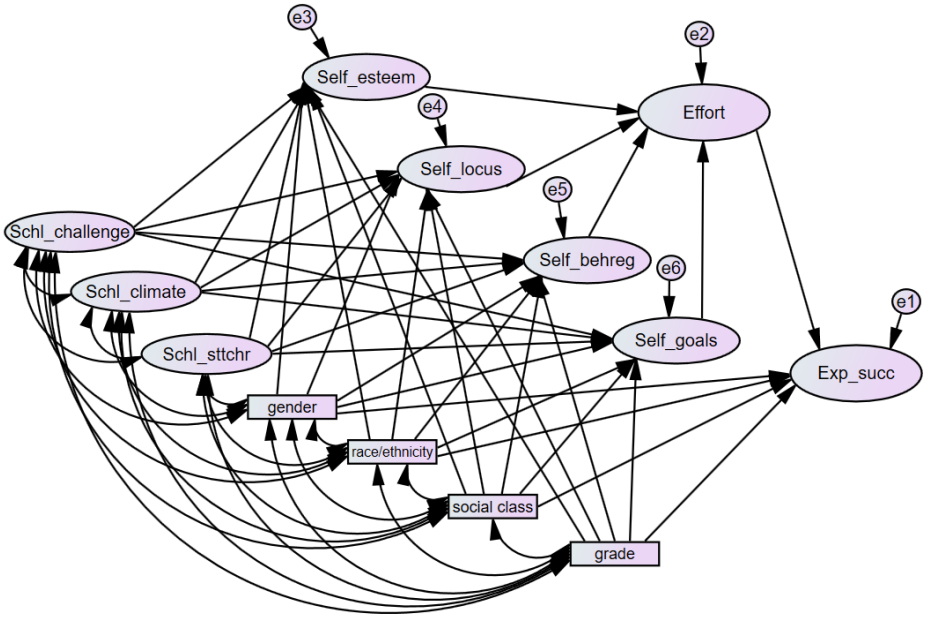

Figure 3. Hypothesized Model 3: The Self and School Systems.

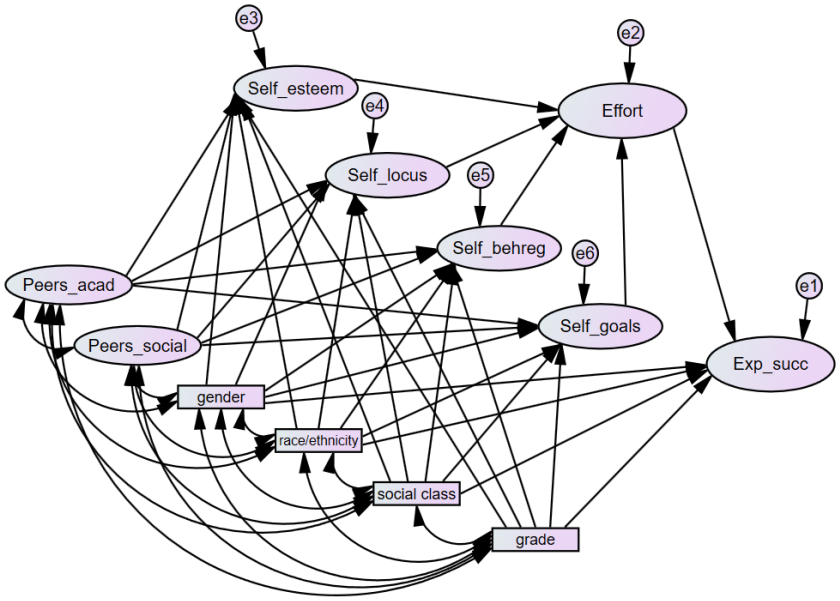

Figure 4. Hypothesized Model 4: The Self and Peer Systems.

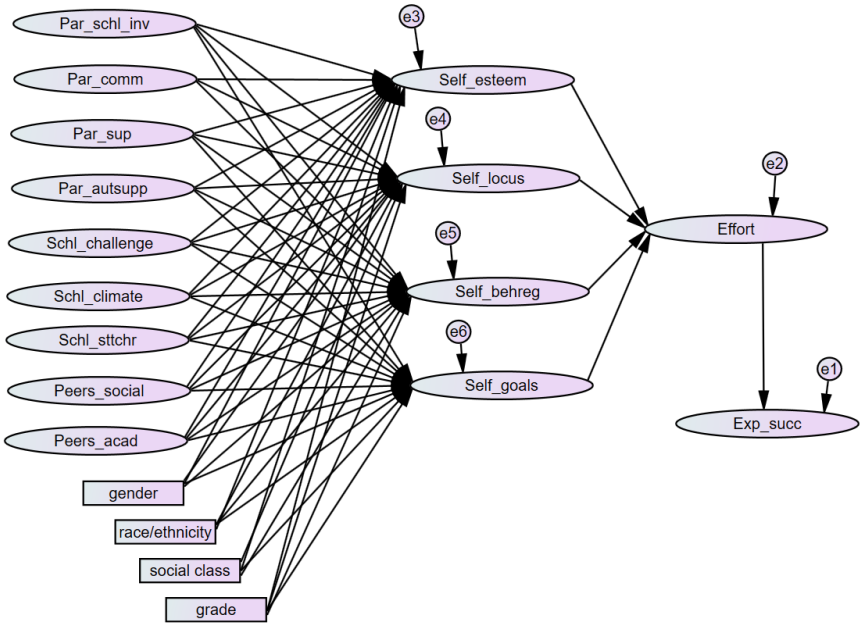

Figure 5. Hypothesized Model 5: The Self, Parent, School and Peer Systems.

CHAPTER II: Literature Review

Theoretical Roots of FTP

It is unique to our species that we can think about our psychological past, present and future. The expectations that one has for one's future has early beginnings in the socialization experiences of a young child in their family, peer group, education and larger social and cultural experience. The concept of future time perspective (FTP) has been explored in regard to psychological and environmental correlates. Researchers have sought to isolate essential influencing and predictive variables that affect our understanding and utilization of our future and all that implies towards goal achievement. Clarifying these variables and their relationships may have impact on understanding ways to facilitate student success towards productive career trajectories.

The concept of time perspective has roots in personality theory. Lewin (1935) discussed the theoretical and experimental foci of psychology of his day. He considered the whole person, including the inner self and the influences of environment, past, and present that was integrated into thought and action. Wallace and Rabin (1960) observed that the interest in the construct of *time* had bloomed in psychology. What was previously referred to as temporal experience was now called time perception or time orientation. They reviewed past literature and the trend to explore relationships between time orientation with other aspects of personality. The present day construct of time perspective is most revealed in the work of Frank (1939) and Lewin (1942) as cited by Wallace and Rabin (1960). Frank (1939) is said to be the first to speculate on this construct in terms of culture and human behavior. In his view temporal factors have a role in culturally expected developmental tasks and underlie cultural mores. These factors affect one's perception of the past, present, and future. Lewin (1942) supported the notion of the social

environment influencing one's actions, which, in turn, were influenced by one's time perspective. His theoretical observations were written just prior to the attack on Pearl Harbor, which suggests that some of this writing was in response to changing world events and connected to a more socio-political view of culture, such as autocratic vs. democratic and not the more micro-cultural issues considered today. Yet, his observations clearly noted individual action was related to one's past, present, and future perspective.

Interest in motivation and academic achievement brought about the emergence of FTP as a cognitive-motivational variable, which has sustained research over time (De Volder & Lens, 1982; Klineberg, 1967; Nuttin, 1964; Simons, Vansteenkiste, Lens, & Lacante, 2004). Simply stated, goals differ in temporal distance, with goals that are further away having a lower valence and subsequently lower levels of motivation towards that goal (De Volder & Lens, 1982). Individuals with a longer FTP have the ability to sustain motivation towards distant goals.

FTP has been defined in terms that have a relationship with learning. Horstmanoff and Zimitat (2007) see FTP as a "non conscious dimension of human functioning that influences decision and action and therefore, exerts an influence on student engagement" (p705). Phan (2009) described FTP as "how individuals perceive and express their relationships to the future that encompasses learning activities" (p. 156). Over time, studies have researched the possibility of developmental lines of FTP (Horstmanshof & Zimitat, 2007; Lessing, 1968; Mello et al., 2009) as well as the connection of FTP to intrinsic and extrinsic factors such as motivation (De Volder & Lens, 1982; Husman & Shell, 2008; Nieswandt & Shanahan, 2007); behavioral regulation (Kitsantas, Winsler, & Huie, 2008; Vázquez & Rapetti, 2006); delay of gratification (Klineberg, 1968); and gender and cultural differences (Adelabu, 2008; Bembenutty, 1999; Mello et al., 2009; Yeung, Fung, & Lang, 2007). As previously stated, goal behavior is integral

to FTP. It is a focus of this analysis to demonstrate that elements of the self-system, such as self-esteem, locus of control, behavioral regulation, and future valued goals have a relationship within the fabric of adolescent functioning towards the development of expectation of future success. These elements have been chosen from the literature to be salient in the formation of goal directed behavior and so are the foundations for the conceptual models presented here. Expectation of success, as a measure of positive/negative future time perspective, is an important construct as a dependent variable for this investigation. Zimbardo and Boyd (1999) recognized the centrality of time perspective within psychology research and called for additional paradigms that include time perspective in a variety of relationships, including as a dependent variable, in order to better understand its role in the formation of social goals. The structural models to be developed and analyzed in the present research will provide insights into the underlying influences of individual self-perceptions and key socializing contexts for adolescents. This chapter continues with an examination of FTP through the lens of the bioecological model.

FTP and the Bioecological Model

The Process-Person-Context-Time model is a view of the individual as a complex organism with nested influences. Process represents direct and indirect relationships that influence future expectations. Person represents student self-system constructs (low-high self-esteem, internal vs. external locus of control, regulatory competence vs. impulsivity, and pro-social valued future goals). Contexts include the many contexts within which a student functions (family, school, and peers). Time represents the influence of expectations about the future at a given time point on expectations at later time points (middle school vs. high school). FTP can be viewed through this lens. Its nature is complex and incorporates many observable student self-perceptions and behaviors that can be captured and proposed within a model that may shed light

on its structure and function.

Bronfenbrenner's view on human development as holistic was a valuable contribution to the field. It supports other developmental theories that stress the uniqueness of each person and the shared input of the social and cultural world at large in support of optimal development (Baltes, 1987; Elder, 1998). The bioecological model is based on the uniqueness of each individual and the complexity of their environment. That environment encompasses a tremendous array of factors that have potential impact on a child's social, emotional, and academic development. It would be difficult to include such an exhaustive list within a research design. For this reason, select and salient factors must be considered based on a priori theorizing from prior research when applying the bioecological model as a lens.

The bioecological model utilizes a group of central tenets referred to as *propositions*, which detail the modes of influence upon an individual by their physical and social environment (Bronfenbrenner & Ceci, 1994). Proposition 1 describes proximal processes as a form of interaction that is consistent and extends over a period of time. These processes are viewed as reciprocal and mutually effective at impacting individuals and environments that are involved. As stated earlier, Bronfenbrenner characterizes proximal processes as a fuel or energy between an individual and the elements of their physical and social worlds (Bronfenbrenner & Evans, 2000). Proposition 2 highlights the importance of the "form, power, content, and direction" (Bronfenbrenner, 1999, p. 5) of proximal processes and their intricate relationship with individual development and varied environments. The bioecological model offers this view to explain the complexity of reciprocal interaction among influential factors on development. Bronfenbrenner suggests utilizing Propositions 1 and 2 as a way to operationalize research designs within the bioecological framework (Bronfenbrenner, 1999). Even with this suggestion,

it is a challenging task to represent all factors that impact an individual within a research design based on these two Propositions.

Bronfenbrenner's classic operational research design example highlights the interaction between mothers of low birth weight infants (Bronfenbrenner, 1994, 1999; Bronfenbrenner & Morris, 2006). This example is useful and meaningful in its description of a network among Process (mother child interaction), Person (represented by low birth weight), Context (social class), and Time (measurement of developmental outcomes at ages 2 and 4). Bronfenbrenner encourages the use of the PPCT components in research design as well as measurement of reciprocal interactions. In this example he noted that the researcher measured the quality of mother to child interaction in a unidirectional fashion without measurement of the infant's responses towards the mother (Bronfenbrenner & Morris, 2006). Measuring the complexity of interaction between factors that theoretically impact an outcome is a challenge for the researcher and may not be within the scope of every analysis. In addition, this example represents the more easily contained environment of an infant as its focus. An operational design based on an adolescent's world is not so easily contained. For these reasons, the present research design will choose to highlight factors that have theoretical support as having impact on an adolescent's expectations of future success in life. Furthermore, it is beyond the scope of this analysis to measure interaction effects among variables. That may be taken up in future work after the relationship among latent constructs is explored.

The bioecological model theorizes that development is rooted in innate biological characteristics, which are captured by the latent constructs representing the self-system in this analysis. In addition, self-system perceptions and behaviors have been found to undergo developmental changes over time. As discussed, in Chapter 1, this change will be examined

through the variable representing grade so that any changes between the middle school and high school cohorts can be examined. The ecological forces of the various microsystems, represented by the latent constructs focusing on the social worlds of parents, school and peers, influence the nature of the self to cause significant individual differences in beliefs and expectations. The overarching macrosystem, which is captured by the controls—race/ethnicity, gender, and socioeconomic class—have a pervasive presence within the world of the self, resulting in additional bearing on the self-system. These multiple systems represent the complexity of the adolescents' social world and have been used to conceptualize the models of impact on expectations of success in the present analysis. SEM allows for the intricate interplay of these forces and for the measurement of their influence on the self, effort at academic tasks, and expectation of future success. Adolescence is a crucial time period developmentally. A better understanding of the contribution of self-system constructs and ecological variables on adolescent performance and expectations can be informative for educational practice. This makes SEM an optimal choice of methodology to examine the questions on the influence of self, parents, school, and peers and any manifestations of developmental differences across time on effort and adolescent success expectations.

Adolescent Expectations of Success and PPCT

The bioecological model describes development as a function of the interaction of heritability and context. Bronfenbrenner and Ceci (1994) refer to proximal processes as the engine of development that propels individuals forward towards psychological growth and development. The fuel that enables this engine to function is specific to each individual's characteristics and to the immediate and larger contexts in which they function. Bronfenbrenner and Evans (2000) describe these processes as a transfer of energy between developing humans

and the social, symbolic and physical environments. Bronfenbrenner and Morris (as cited in Bronfenbrenner & Evans, 2000) underscore their importance with an acknowledgement that proximal processes are responsible for the building of competence through the advancement of knowledge, skill, or ability to control and direct behavior. With the addition of the lens of time to the nested spheres that influence the individual, the bioecological model evolved once again to emphasize four main concepts within a research design model labeled Process-Person-Context-Time (PPCT) (Bronfenbrenner & Morris, 2006). The bioecological model further developed to consider aspects of genetics and context with the objective to provide a theoretical design of human development that can be empirically tested towards informing effective social policies. An adolescent enters the world with innate characteristics that are impact over time through multiple social and cultural contexts. These multiple variables result in a set of self-system constructs about competency and regulatory skills and have potential sway on academic effort and expectations of future success.

The theoretical models that underlie this analysis and drive its hypotheses systematically explore the details of the self-system and individual social context alone (Models 1–4; Figures 1–4, p. 21–22), and together (Model 5; Figure 5, p. 23), under the bioecological framework on the influence of adolescent expectations of success. The factors that theoretically influence adolescent expectations of success are hypothesized to be elements of the individual's characteristics (self-system) and the characteristics of family, school, and peers. These elements are further influenced by the larger macrosystem at play including socioeconomic status, race and ethnicity, and gender. Specifically, the characteristics of each context will be measured in their influence on characteristics of the self, which are hypothesized to mediate individual behavior, which in turn mediates expectations of success. Characteristics of the self, that act as

mediators, are hypothesized to be those elements that represent self-beliefs, valued future goals, behavioral regulation, and locus of control. They influence behavior representative of academic success, which influences success expectations. In addition, possible differential impact related to socioeconomic class, race/ethnicity, gender, and age group (6^{th}-9^{th} grade vs. 10^{th}–12^{th} grade) will be examined.

Latent Constructs Within Models

The latent constructs chosen for the present analysis were conceptualized through the nature of the Sloan study questionnaire, which suggests the use of developing constructs from multiple questionnaire items, and prior work of this researcher. The constructs were developed from similar items in the TLQ, which is a version of the NELS questionnaire. The Sloan Study codebook specifically mentions, "composite variables based on similar measures may also be created" (Schneider, 2013, p. 9). In prior work, this researcher explored parent and teacher relationships as possible mediators utilizing the Sloan data with self-esteem, advanced course enrollment in high school, and pro-college preparation on future expectation (Del Rosso, 2015). Only parent communication in regard to course activities was found to have a mediating role, and only with advanced course enrollment on expectation of success. Self-esteem had a direct, positive, and significant relationship with expectation of success. The constructs in the prior work were chosen to explore the nature of internal experience (self-esteem) and successful high school completion behaviors (advanced course enrollment and college preparation) that might be influenced by parents and teachers towards future expectation (Del Rosso, 2015). These results informed the hypotheses of the present analysis that self-esteem might, instead, have a role as a mediator with elements of the social world that could influence successful internal and behavioral responses towards effort and expectation of future success.

In addition to these sources, the constructs chosen in the present analysis are represented in the literature as related to important elements of FTP. This was an important consideration in their inclusion. As an additional corroboration for clustering certain questionnaire items used for a particular construct, comparisons were made to established scale items from related research. Relationships of constructs to FTP research and comparable scales are discussed in the following sections in regard to model constructs.

Expectations of Success

In light of research connecting FTP with goal formation, Husman and Shell (2008) developed a multidimensional measure of FTP that incorporates four subcategories which speak to individual and dynamic aspects of FTP. These subgroups are Extension (an individual's time frame in their view of distant goals), Valence (the value one places on future goals), Connectedness (the ability to connect present behavior and future goals), and Speed (a measurement of time passing awareness in terms of planning skills). There is an expectation that individuals with high FTP will be able to plan and carry out goal-oriented behavior more successfully. This includes that ability to extend or project their goals into a more distant future, place a high value on goals that are more distant, be able to make strong connections between present behavior and future goals and be more intrinsically capable to plan for future events and deadlines.

Expectation of success represents the anticipated future of adolescents in this study. The questionnaire items utilized to represent this construct have strong support in research on adolescent future hopes and fears. As stated, in Chapter 1, the content of adolescent concerns in regard to adult life are focused on developmental tasks and are regularly seen in research on adolescent future time perspective (Nurmi, 1987, 1989a). A possible indicator variable of

Expectation of success in the Sloan data is ‘chances (you) will have a job that pays well’. Table A2, p. 185, contains possible indicator variables for Expectations of success.

Effort

In support of previously mentioned research on FTP and effective self-regulatory behavior, Phan (2009) explored the connection of FTP and epistemological beliefs with academic achievement through achievement goals and study strategies. Phan (2009) based his work on Schommer’s theoretical approach to epistemological study, which correlated elements of knowledge and learning with performance variables such as comprehension, persistence on tasks, and problem-solving. His study demonstrated the connection of strong FTP with deep processing study strategies (control cognition and behavior through metacognitive planning and monitoring) (Duncan & McKeachie, 2005) in university students. Phan also showed that FTP to be positively correlated and predictive of mastery, performance –approach and performance-avoidance goals (Phan, 2009)

The Miller and Brickman (2004b) model of behavioral regulation and motivation links the perceived instrumentality (“the perception that completion of a task will directly increase the probability of achieving a future goal”) (Husman, Derryberry, Crowson, & Lomax, 2004) of a task to increased levels of engagement and behavioral regulation. At its most basic, effort is a special case of arousal that pertains to the actions of an individual and involves sustained attention (Kahneman, 1973). Adolescents who demonstrated high study effort also placed high valence on distal future goals vs. students with low study effort (De Volder & Lens, 1982). The questionnaire items in the Sloan Study data that measure intellectual effort are discussed by Carbonaro (2005), as mentioned, in Chapter 1. A possible indicator variable of effort in the Sloan Study data is ‘tries as hard as possible in math’. Table A3, p. 185, contains possible

indicator variables for effort.

Person: Self-System Constructs

Self-esteem. This analysis includes a measure of global self-esteem. Using a global self-esteem measure maintains clarity within the model as it has been demonstrated that domain-specific self-esteem is a separate but related construct (Marsh & Shavelson, 1985). Levels of global self-esteem demonstrate positive correlations to expectation of success or failure when expectation was measured on a cognitive vs. an affective level (McFarlin & Blascovitch, 1981). Self-esteem was introduced as a phenomenon of social comparison (Cooley, 1992). But it can be viewed as bimodal with inner and outer components (Franks & Marolla, 1976), which overlap in the formation of self-esteem (Gecas & Schwalb, 1983). These components are interactive rather than additive. They contribute to global self-esteem in different ways. The outer component comprises the viewpoint of significant others in terms of social approval, which leads to feelings of self worth. The inner component is the individual efficacy and aptitude via awareness of one's effect on the environment, which leads to feelings of power and competence (Franks & Marolla, 1976). The one-sided outer component that comes from social approval has been characterized in the literature as *the looking glass self* (Cooley, 1992) and may be a limited view. The interactive nature of the two components may account for the variety and complexity of self-esteem as a product of social approval and one's perceptions of competence through social and physical world interactions.

Self-esteem is an important element of behavioral regulation and is expressed as a sense of worthiness developed through the interplay of social and environmental interaction (Bandura, 1986). Hoyle and Sherrill (2006) suggest the mechanism by which expectation of success form and are carried out involve the representation of multiple (future) possible selves that one

projects. These selves serve as motivators in carrying out one's expected future. The notion of multiple selves in the present day could also account for the variations in self-esteem seen in adolescents that is often role-oriented and contextually framed (family, school and peers) (Gecas & Schwalb, 1983). The questionnaire items in the Sloan Study data that measure self-esteem reflect scale items on the Rosenberg Self-Esteem scale (Robinson, Shaver, & Wrightsman, 1991, p. 120). A possible indicator variable of Self-esteem in the Sloan data is 'able to do things as well as others'. Table A4, p. 185, contains possible indicator variables for self-esteem.

Locus of control. There is abundant research that recognizes the univariate relationship of control beliefs and measures of competency, affective responses of causation and expectancy (Bandura, 1986; Eccles & Wigfield, 2002; Weiner, 2005). Control beliefs may have two dimensions depending on the focus on competencies or contingencies (Bandura, 1989). Control beliefs related to competencies demonstrate beliefs in the ability to successfully accomplish a goal and involve self-efficacy. Control beliefs related to contingencies include expectancy beliefs and are made possible through symbolic thinking and forethought. Control beliefs related to competencies, such as self-efficacy, are related to affective causal attributions. Shell and Husman (2001) found empirical support associating competency beliefs with outcomes as measured by academic grades (expectancy) and contingency beliefs with study time and effort (causal attributions). In an effort to shed light on multivariate relationships with control and academic behaviors, Shell and Husman (2008) found empirical support for a variety of dimensional structures depicting locus of control as related to differences in patterns of behavioral regulation and effort in an academic setting. Quest for knowledge building and higher-level question asking was associated with higher self-efficacy for learning in each control pattern. Control patterns representing more internal application of strategy use and effort were

associated with more efficient self-regulated learning strategies and increased study time.

Locus of control is a measure of the extent an individual feels their actions towards success are within their control. A sense of self is derived from the reflected appraisal of others as well as the view of ourselves as agents of action within our environment (Gecas & Schwalbe, 1983). The questionnaire items in the Sloan Study data that measure locus of control reflect scale items on the Rotter Locus of Control scale (Robinson et al., 1991, p. 120). A possible indicator variable of Locus of control in the Sloan data is 'does not have enough control over life'. Table A5, p. 186, contains possible indicator variables for locus of control.

Behavioral regulation. Behavioral regulation is important in forming and carrying out a plan towards one's projected life goals (Bandura, 1986). Goal oriented behavior is also most productive when one can overcome failure and effectively cope with the possible lowering of self-esteem that may follow (Crocker, Brook, Niiya, & Villacorta, 2006). An accepted indicator of regulatory quality in adolescents is the use of Office of Discipline Referrals (ODR) in elementary and secondary schools (Irvin et al., 2006; McIntosh, Brigid Flannery, Sugai, Braun, & Cochrane, 2008). ODR's include referral for lateness, cutting classes and act as flags for students having adjustment problems in the school setting. ODR's are used as data for decision making in regard to individual students and school policy and programming. The quantity of ODR's for an individual student have been used to predict later difficulties with the social and academic demands of school (Alexander, Entwisle, & Kabbani, 2001; Gutman, Sameroff, & Cole, 2003; Sektnan, McClelland, Acock, & Morrison, 2010). The questionnaire items in the Sloan Study data that measure behavior regulation reflect the behaviors associated with ODR's. A possible indicator variable of Behavioral regulation in the Sloan Study data is 'how many times did (you) cut/skip class'. Table A6, p. 186, contains possible indicator variables for

behavioral regulation.

Valued future goals. Miller and Brickman (2004b) illustrate a model of behavioral regulation that is dependent on the development of valued future goals. These distal goals are important to the development of proximal goals that help guide present-day action. They are formed through the values and knowledge one has about the future. A key to the Miller and Brickman model is the student's value of the academic task as instrumental to the attainment of a valued future goal. Many researchers explored the relationship of affect and FTP as a component of instrumentality (Kessler & Staudinger, 2009; Scheibe & Blanchard-Fields, 2009; Walker & Greene, 2009). Perceived instrumentality and factors that impact it have been shown to also influence goal behavior (Walker & Greene, 2009). Miller and Brickman consider future goals as "self-reliant, self-defining goals that provide incentive for action" (2004b, p. 14) and are often reflective of developmental tasks within a sociocultural context. The questionnaire items in the Sloan Study data that measure valued future goals reflect this view. A possible indicator variable of Valued future goals in the Sloan Study data is 'important being successful in line of work'. Table A7, p. 186, contains possible indicator variables for valued future goals.

Summary. As stated earlier, goal-directed behavior is a key component of FTP. Internal supports towards the realization of future goals, such as self-esteem and locus of control beliefs, the ability to plan valued goals and subgoals with differing temporal trajectories, and the ability to delay gratification during pursuit of goals and subgoals are important in successful goal attainment. Behavioral regulation and personally meaningful future goals provided a link between personal control beliefs in the prediction of the length of students FTP (Vázquez & Rapetti, 2006). Internal locus of control predicted extended FTP and external locus of control predicted shortened FTP. This connection of behavioral regulation and value of present behavior

to future goals is seen in other research as well. Motivation and behavioral regulation was found a better predictor of academic success in first year college students than high school GPA and SAT scores (Kitsantas et al., 2008).

Motivational elements that clearly have impact on FTP include the interplay of control beliefs, the ability to regulate emotion and affective responses towards behavioral regulation. These internal resources are further impacted on by social world interactions and experiences. Model 1 conceptualizes the experience of the self-system constructs, effort, and expectation of success (Figure 1, p. 21). The representation of these interconnected forces through SEM will be able to shed light on their relative influences on adolescent self-system constructs, Effort and Expectations of success.

Context and Process: The Microsystem

Socialization through family. Family interactions are seen as integral as the first circle of influence on the child. Nurmi (1991) proposed that parents influence the development of future orientation in at least three distinctive ways. Interests, values, and goals are influenced through the normative standards set within a family. Second, parents serve as role models for accomplishing developmental tasks as well as for planning, self-evaluation, and coping skills while developmental tasks are reached. Finally, attributional beliefs are often learned through family interactions. Parents also contribute to the development of regulatory and autonomy skills that may directly impact competency beliefs and provide the internal resources for goal attainment (Barber, 1997). Parents act as important socializers for their children, including being role models for aspects of planning, carrying out, and evaluating the success of developmental tasks (Nurmi, 1991). Their influence can include messages through supervision for monitoring, rule setting, and developing a sense of identity and self-worth (Barber, 1997). In a cross-

sectional analysis, youth (35% non-Latino Caucasian, 12% African American, 36% Puerto Rican, and 8% other Latino), aged 8-17 from very low-income families, who received more active parental monitoring demonstrated greater self-regulatory skills and greater self-esteem. The youth with greater competency skills also demonstrated higher resiliency (children who achieve positive outcomes in spite of significant hardships) as measured with scales of adaptive functioning and mental health issues (Buckner, Mezzacappa, & Beardslee, 2003).

Parental autonomy support is viewed as a precursor toward mature self-regulatory behavior. In a path model analysis parental autonomy support predicted later pro-social engagement mediated through a measure of need satisfaction (Gagné, 2003). Autonomy orientation had a significant path to pro-social engagement and also a partially mediated path through needs satisfaction in college age subjects. Autonomy support is theorized to be a form of nurturing which satisfies basic needs of autonomy, competence and relatedness. This is believed to create a milieu within the individual to act with more pro-social behavior.

Relatedness or connection with others, regulation of behavior and psychological autonomy are three central dimensions of socialization that may be formulated via interactions with family, peers and school (Barber & Olsen, 1997). Multiple regression analyses examined connection, regulation and autonomy in multiple social contexts with grades, feelings of depression and antisocial behavior for boys and girls in grades five and eight. The family model predicted feelings of depression utilizing family autonomy alone for fifth graders and family connection and autonomy for eighth graders. In the fifth grade, higher levels of reported psychological autonomy from parents and higher levels of reported psychological autonomy and connection with parents in the eighth grade reported significantly lower levels of feelings of depression. Girls in grade eight who reported higher regulation at home and with peers also had

significantly lower levels of antisocial behavior.

The questionnaire items in the Sloan Study data that measure parent autonomy support reflect the view of autonomy support as a continuum of input into decision-making and encouragement for adolescents to make decisions based on their own personal interests and values (Soenens et al., 2007). The questionnaire items in the Sloan Study data that measure parent-school involvement reflect the items on the subscale Parent Involvement at School on the Parent Teacher Involvement Questionnaire (Hill & Craft, 2003; Kohl, Lengua, & McMahon, 2000). Parent-adolescent communication is a strong reflection of the stability of the parent-child relationship and demonstrates connectedness (Laursen & Collins, 2004). Closeness and intimacy behaviors evolve as children age. Physical interaction may decrease but conversation involving information sharing and emotional expression increases (Hartup & Laursen, 1991). The questionnaire items in the Sloan Study data that measure parent communication reflect parent interest in academic behavior and future plans. It was found to have indirect mediation between advanced course enrollment and expectation of success in this researchers prior work (Del Rosso, 2015). Indirect mediation is expanded on in Chapter 3. It implies that other mediators may be integral to a relationship between latent constructs. An example of the relationship between parent communication and FTP was not found in the literature. Its importance in the model rests on its hypothesized contribution to the development of relatedness and connection with others.

The questionnaire items in the Sloan Study data that measure parent supervision reflect scale items that have been used in other research studies (Barber & Olsen, 1997; B. B. Brown, Mounts, Lamborn, & Steinberg, 1993; Herman et al., 1997). These items focus on parent knowledge of children's use of time and are related to the growth of regulatory behavior. Model

2 conceptualizes the experience of the parental microsystem constructs on the self-system, effort, and expectation of success (Figure 2, p. 21).

The possible indicator variables from the Sloan data for latent constructs related to parents are parent autonomy support: '(you) are responsible for important life decisions'; parent-school involvement: 'parents attended school meeting'; parent communication: 'discuss school courses with parent'; and parent supervision: 'parents investigate where (you) are after school'. Tables A8-A11, pp. 187–188, contain possible indicator variables for parent related constructs.

Socialization through school. Schools have a mission to promote learning and develop prosocial behavior. In the same multiple regression study as noted above, eighth grade males who reported high levels of school connection also had lower levels of feelings of depression (Barber & Olsen, 1997). Boys and girls in grade eight who reported a positive connection with teachers and girls who reported higher levels of autonomy in school had higher grades.

The social relationships within school settings represent a unique and complex set of influences on student motivation via school connectedness concepts. American female adolescents measured on the Zimbardo Time Perspective Inventory (ZTPI) demonstrated less negativity about the future than males (Mello and Worrell, 2006). Within culture gender differences have been found. A strong positive correlation was found between greater future orientation, school belonging, school acceptance, and academic achievement for urban African American female adolescents. School belonging and a present time perspective were found to be the significant predictors of a lower academic achievement for urban African American male adolescents (Adelabu, 2007).

Perceived academic school challenge is a more functional measure of school support through the encouragement of competence and mastery. It assumes the possibility of

competency through an expectation of effort in academic pursuits and school supports for learning and development (Payne et al., 2005). The literature on positive youth development acknowledges the importance of promoting competencies in one or more areas of academic, social, emotional and behavioral development (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004). Encouraging student academic challenge is one way of affecting student achievement. Programs that are designed to promote prosocial capabilities also might seek to achieve bonding between students and adults and between peers. Related program goals are cognitive competencies, self-efficacy, and positive beliefs about the future (Catalano et al., 2004). These findings may be applied to any school organization if they are valued. Elements of school structure that are seen as important to learning are best and more likely developed when they are assessed and responded to with actions towards improvement (Osher & Kendziora, 2010).

School climate is one of many affective measures of a supportive social-emotional environment for learning and development (Libbey, 2004). School climate has varying representations in the research literature. It mainly focuses on an overall supportive academic environment including fairness, respect and positive student relationships with peers and adults. It is considered a measure of school connectedness related to school belonging (Libbey, 2004). Goodenow and Grady (1993) studied 301 middle school students in an urban setting in Northeastern United States and examined correlations of school belonging (a general measure of acceptance and support from teachers, school personnel and other students) and the value peers placed on academics with measures of motivation and persistence. School belonging was significantly correlated to expectancy of academic success, value of schoolwork, school motivation, and to friends' value of academics. The influence of peers considered friends was also evident in the findings. Friends' value of the importance of academic work was significantly

correlated to the students' overall value of schoolwork and school motivation, yet it did not correlate as highly to importance of academic work as school belonging measures. When friends' value of academics was controlled for, school belonging was still significantly associated with expectancy of academic success.

In examination of the total sample and ethnic and gender subgroups, school belonging predicted significant proportions of variance in the motivation scales when friends' value of academics were controlled. Therefore, it was suggested that even though friends' value of academics holds a significant influence to motivation in preadolescence, it did not override perceptions of school belonging and self-rated teacher support (Goodenow & Grady, 1993). In addition, various microsystem influences often interact. Parents who are more involved in their child's school and academic life were reported by students to demonstrate support in school activities and interests (Dubow, Arnett, Smith, & Ippolito, 2001). These support behaviors have impact on positive expectations of the future.

Roeser, Midgley, and Urdan (1996) explored the impact of school goal structure (task mastery vs. relative ability) and student perception of teacher-student relationships on academic efficacy, affect toward school, and academic achievement in eighth grade. Perceived teacher-student relationship had a direct positive effect on positive school affect and was the strongest predictor of feelings of school belonging. The previously discussed work of Walker and Green (2009) supports this finding with the impact of perceived school belonging as a predictor of cognitive engagement and mastery goal orientation.

The questionnaire items in the Sloan Study data that measure school academic challenge reflect the view that challenge promotes inquiry and higher-ordered thinking and implies a demand for students to be prepared for class (Newmann, 1992; Payne et al., 2005). The

questionnaire items in the Sloan Study data that measure school climate reflect the use of similar measures in the research literature (Coker & Borders, 2001; Simons-Morton & Crump, 2003). These items focus on the elements of a school that contribute to positive school perceptions, fair discipline, and a welcoming atmosphere. The questionnaire items in the Sloan Study data that measure student-teacher relationships reflect interactions that are supportive and caring. These elements are reflected in other research that connects perceived teacher support to academic outcomes (Birch & Ladd, 1997; Ladd & Burgess, 1999; Wentzel, 1998). Model 3 conceptualizes the experience of the school microsystem constructs on the self-system, effort, and expectation of success (Figure 3, p.22).

The possible indicator variables from the Sloan data for latent constructs related to school are Perceived Academic challenge: '(you) are challenged to use (your) mind in English'; School climate: 'discipline is fair at school'; and Student-teacher relationship: 'teachers really listen'. Tables A12–A14, p. 188–189, contain possible indicator variables for school related constructs.

Family and school interface via relationship building. The hypothesized associations between FTP and supportive student-adult relationships have parent-child interactions and support at their core. Parental behaviors that support effective relationship building, competency beliefs and connection of school behaviors with later developmental tasks can theoretically impact a child's development of meaningful future goals. Preschool children who have positive, close relationships with their mothers are found to also have secure teacher-child relationships. This also positively correlates with scales on peer social skills, work habits, and competency (Pianta, Nimetz, & Bennett, 1997). Children with control issues in their relationship with their mother developed insecure, conflicted, and dependent relationships with their teacher. In addition, children with control issues with their mother also rated positively on scales for

shy/anxious and behavior problems and negatively on scales for work habits, frustration tolerance, and overall competency (Pianta et al., 1997). These findings imply that the impact of a child's secure or insecure relationship with his or her mother could have a large effect on later school success.

Fathers are also seen as integral to a child's future competency in school. Fathers of first graders who supported their child's independence had children with significantly lower conflict with the teacher and higher social skill scores. Similarly, parents who demonstrated strong emotional intimacy had children with lower conflict and higher social skills as per teacher ratings. For children whose mothers and fathers demonstrated emotional sensitivity, parental valuing of autonomy and emotional intimacy in their marriage was a strong predictor of positive teacher-child relationships and positive behavior in the classroom for the first three years of public school (Kasak, 2004)

In an extensive longitudinal study with data collection over 5 years from preschool through second grade, Burchinal, Peisner-Feinberg, Pianta, and Howes (2002) looked at the developmental growth of students as correlated with elements of parental attitude and teacher relationships. Increase in reading scores over time was most significant for female children who were extroverted. Significant positive changes in reading scores between preschool and second grade were also more likely for children whose parents reported more positive parenting practices and who also had mothers with more education. Another longitudinal analysis of maternal attachment, family stress indicators, and preschool relationships with peers and teachers suggests that there is a strong correlation of secure maternal attachment with similarly secure base behavior with preschool teachers suggesting that attachment with a primary caregiver strongly influences later attachment relationships (DeMulder, Denham, Schmidt, & Mitchell,

2000). Research with urban families of predominantly African-American background demonstrates that parents can have a strong effect on classroom competency skills such as motivation and attention in preschool through involvement in supportive activities in the home such as reading to a child and discussing the school day (Fantuzzo, McWayne, Perry, & Childs, 2007).

This holds true for young adolescents as well. Utilizing SEM, parents' academic communication (regular discussions with teacher and discussions about school with child) in grade 7 demonstrated long-term association with reduced behavior problems in grade 8 and higher career aspirations in grade 11 (Hill et al., 2004). Reduced problem behavior in grade 8 was associated with higher achievement levels in grade 9, suggesting an indirect effect of parent communication. There was no direct effect between parent communication and 9th grade achievement. Achievement level in grade 9 was positively associated with grade 11 aspirations.

Student-teacher relationships. Positive teacher-student relationships encourage respect and attachment and are linked to greater achievement (Hughes, Cavell, & Jackson, 1999). High school students are able to identify and articulate when teachers are supportive and influential in their school experience. At these times they report the impact such support has on their desire to learn, hopefulness about their future and encouragement to take on academic challenge (Foster, 2008). Teacher behavior that encourages such support includes increased availability for contact and support, a partnership role in discovering learning needs (listening to students and giving them 'a say'), and verbal and tangible behaviors of commitment to student learning (interest, praise and listening to student needs) (Foster, 2008).

The importance of the teacher-child relationship has been established as strongly correlated with measures of school adjustment (Birch & Ladd, 1997). In an examination of three

specific characteristics of the teacher-child relationship (closeness, dependency and conflict), children with higher levels of closeness and/or less dependent levels per teacher report had higher visual and language skill scores compared to students with lower levels of closeness. Teacher-child Closeness positively correlated and was a predictor of higher visual and language stanine scores on the Metropolitan Readiness Test. Teacher-child Dependency was negatively correlated with those scores. The Closeness dimension was related significantly to a child's school liking as measured by teacher ratings. The Dependency dimension correlated positively for children whose teachers reported them as more lonely in school (Birch & Ladd, 1997).

Baker (2006) studied students, longitudinally, from kindergarten through fourth grade. Those rated as having close teacher-child relationships showed a low moderate association with reading grades and positive work habits and a more pronounced association with social skills. Overall, teacher-child relationship quality that was positive for scales of warmth and trust and, low for conflict and was a small but significant predictor of reading achievement in fourth grade. There is also evidence of an association for a faster growth rate of phonological awareness with a high quality relationship with a first grade teacher (Curby, Rimm-Kaufman, & Ponitz, 2009).

Emotional competence has been linked to positive student achievement so much so that it should be considered an essential element of a classroom environment (Meyer & Turner, 2006). Very young children are capable of expressing emotion knowledge (Warren & Stifter, 2008). Garner and Waajid (2008) established that preschool children were capable of demonstrating their emotion knowledge via interview discussion of emotionally laden vignettes. This information was correlated with teacher ratings of their relationship quality with individual children, classroom adjustment and end of the year assessment on readiness skills. Teacher ratings of classroom adjustment and readiness skill levels had a positive association with a

child's ability to demonstrate emotion situation knowledge as well as with teacher-child closeness. Furthermore, teacher child conflict was negatively associated with school competence and readiness skill level. Teacher-child conflict was positively related to teacher-child dependency. These correlations may indicate that a regulatory effect could be connected to greater emotional knowledge for young children which could lead to advantages for mastering readiness skills (Garner & Waajid, 2008).

Studies that examine a child's emotional connections with school give insight to the changing emotional view of the adolescent. Lynch and Cicchetti (1997) explored students' thinking about key relationships during childhood and early adolescence such as relationships with one's mother, best friend, teacher and classmates. Students in grades 2 through 8 scored their relationships on parameters of emotional quality and psychological closeness. Elementary aged students reported more secure patterns of relatedness with adults than do middle school students. Middle school students were found to have the most negative relationship with teachers including a disengaged pattern or less likely to have an optimal or adequate pattern of relatedness with their teachers. Yet, middle school children demonstrated social competence in that they are more likely to have a positive relatedness pattern with peers (best friends and classmates) than elementary school students (Lynch & Cicchetti, 1997).

This shift in orientation from adult relationships to peers is characterized in more recent research as well. Furrer and Skinner (2003) found that a high sense of relatedness through self- and teacher-ratings positively correlated with students' emotional and behavioral engagement in school. In a sample of third to sixth graders, a child's sense of relatedness (sometimes called belonging) to major social partners (parents, peers and teachers) demonstrated a significant increase between third and fifth grade. Yet, in middle school, it was noted that relatedness

measures dropped significantly. This may be one reason the literature on the quality and impact of teacher-student relationships in adolescence is difficult to find. Developmentally, students in the early adolescent years are shifting their focus away from establishing adult relationships and more to establishing peer relationships (Lynch & Cicchetti, 1997). It becomes further difficult to assess an older students' quality of relationship with teachers due to the structural changes from elementary to middle and high school. As a student ages through the educational system, there is no longer a primary teacher that serves as an anchor for the child as we see in the earlier years of education (Baker, 2006).

Family and school relationship. Family connection with teachers and schools also changes over time. Family contact diaries illustrate that families often reduce the amount of initiated contact with the school as early as the transition from preschool to kindergarten, when more school initiated contact was noted (Rimm-Kaufman & Pianta, 1999). Children would benefit from schools valuing and encouraging family-school contact as children age. Emotionally close relationships with parents extend into the social context of school to help build relatedness with teachers. Parent communication and parent-school involvement enables parents to understand and communicate about the extended learning and social world of their child. Parental autonomy support and supervision contribute to regulatory skill development, competence, relatedness, reduced antisocial behavior and the internal resources needed to help develop, plan and carry out future goals. Schools influence behavior through encouragement and support towards challenge and connectedness. Peer relationships provide models of behavior. These could lead to increased achievement behavior, if a shared peer value. The experience of multiple social contexts is represented in the bioecological model applied in the present analysis. The use of SEM to answer questions about the complex interrelationships in the multiple social

world models of adolescent Expectations of success can help to examine their relative influences. Through multiple models where social contexts are viewed separately and together, relative influences of each context can be examined. We continue to the examination of the peer microsystem and larger macrosystem influences on FTP and end the chapter with an in-depth look at developmental differences of younger and older adolescents.

Peer relationships. The quality of peer social connections can impact adolescent psychosocial adjustment and school-related behaviors (Woodward & Fergusson, 2000). Positive school involvement of peers in areas of achievement behavior had positive impact on adolescent achievement behaviors and was found to have an additive effect with parental school involvement (Im, Hughes, & West, 2016). Shared peer values are often considered influences to adolescent behavior. This has been explored mostly in-depth in the literature in regard to risk-taking behavior (Card & Giuliano, 2011; Gardner & Steinberg, 2005). The view that peers influence such behavior has been challenged. Correlation of peer behaviors may simply reflect shared values and choice which was also the impetus to begin the peer relationship (Jaccard, Blanton, & Dodge, 2005). Yet, a further complication of peer influence is the developmental stability of the adolescent being influenced. Moderate levels of behavioral disturbance were associated with more likelihood of peer influence (Vitaro, Tremblay, Kerr, Pagani, & Bukowski, 1997). Higher levels of autonomy development in adolescents can be considered a buffer to negative influences. Autonomy development also indicates an overall higher level of psychosocial functioning (Allen, Porter, & McFarland, 2006).

Bandura discusses the characterization of ‘storm and stress’ in adolescence. He indicates that a adolescents are most likely to adopt the values and standards of behavior of their parents and to choose peers that share similar values (Bandura, 1964). In fact, because peers often share

the similar values of their respective families, they may serve as additional regulators of behavior when parents are not present (Goodenow & Grady, 1993). Non-conforming adolescents who do not share the same values and standards of behavior as their parents often represent a power reversal in the parent child relationship and also may associate with peers with same inclinations. Model 4 conceptualizes the experience of the peer microsystem constructs on the self-system, effort, and expectation of success (Figure 4, p. 22). The questionnaire items in the Sloan Study data set that measure peer-shared values reflect the standards of behavior that contribute to the fulfillment or non-fulfillment of the developmental tasks of adolescence. A possible indicator variable from the Sloan data for Peer-shared values is: 'among friends, regular (school) attendance is important'. Tables A14-A15, p. 189, contain possible indicator variables for peer-shared values.

Context: The Macrosystem

FTP, culture, gender, and race. Planning for one's future is associated with the execution of goal-oriented behaviors. Nurmi (1989b) breaks down expectation of the future into three interwoven processes: motivation, planning, and evaluation. The larger macrosystem of culture and society can affect future orientation at any point in these three phases with impact on future oriented goals. Green et al. (2012) describes the self-system of motivational development as the self, context, engagement, and outcome. The context of activities towards future goals is influential. A sense of belonging to that context influences motivational components. Education, career, and leisure activities were associated with adolescents from middle class families as well as more hopes concerning public life rather than personal life compared to adolescents from lower socioeconomic classes (Green et al., 2012).

The concept of possible selves has been introduced as a conceptual link between

cognition and motivation (Markus & Nurius, 1986). Possible selves embody individually hoped-for and feared futures and, as such, incentivize the planning and regulation of behavior. Yowell (2000) interviewed Latino adolescents in regard to future possible selves with findings that have some support for the work of Lamm, Schmidt, and Trommsdorff (1976). Interview themes emerged that included five coded domains that subjects were asked to prioritize. In order from most to least frequent priority, they were: education, occupation, family, personal well being, and friendship. There were significant differences among the priority rankings that girls and boys placed on hoped-for selves. Girls prioritized educationally related hoped-for selves significantly more than boys as well as significantly greater than the other four domains. Boys prioritized occupationally related hoped for selves significantly more than girls. Boys equally prioritized educational and occupational hoped-for selves and demonstrated a significantly higher priority for those domains over the other three remaining domains.

The larger cultural sphere has impact on future orientation and the expectation of realizing future goals. Trommsdorff (1983) discussed important theoretical considerations on how socialization affects future orientation through role expectations on a sociopolitical level as well as differing views of control orientation, which is the belief about the relationships and causes between future events; that is, the extent that people believe they can control their future (Trommsdorff, 1994). Nurmi (1987) found age, sex, and socioeconomic class had important relationships with the hopes and fears of urban adolescents in Finland. Age differences between younger and older adolescents differed in the amount of future hopes and fears they had as well differences in content of hopes. Older adolescents had more future aims and had more concern regarding occupation and aims related to family. Fifteen to eighteen year old girls had more hopes in regard to relationships with parents and peers as well as more concerns about future

families than boys of the same age. Older adolescents had more fears than younger ones. Socioeconomic class had no main effects on the content of hopes or fears. However, individuals from higher socioeconomic classes demonstrated a longer future orientation than those from lower socioeconomic classes, especially for hope concerning vocational interests (Nurmi, 1987).

Race and ethnicity influence future Expectations of success among adolescents. Adelabu (2007) examined the relationship of time perspective and school belonging to academic achievement for a sample of urban, African-American adolescents. FTP was not a significant contributor to the variance in academic achievement for the total sample, but present time perspective (level of present orientation) and school belonging were significant in varied directions for females and males. FTP, school belonging, and school acceptance were significant positive predictors of academic achievement for female participants. Present time perspective had a negative relationship with academic achievement and accounted for a significant portion of its variance for males. Male participants reported higher levels of school rejection than females, which was associated with lower grades. This suggests that there are gendered racial differences among motivational factors towards academic achievement among urban African American adolescents that require further investigation.

Recent studies have not found gender differences for FTP or for its components when focused on Western subjects (Bembenutty, 1999; Mello et al., 2009). Although the sample group was small, American adolescents' were found to have an understanding of their past, present and future that is both absolute (a singular time point) and fluid (considering multiple time points across a lifetime) and included more descriptive components of the future and the past than the present without gender differences noted (Mello et al., 2009). For Chinese men and women, FTP and their ability to be actively socially engaged (the concept of Renqing) were found to

have moderating effects on an individual's social personality characteristics (Yeung et al., 2007). Yeung, et al. found that Chinese men and women differed significantly in the size of their social network (amount of relationships was larger and they were more emotionally close for females than males), yet FTP was not a factor in predicting gender differences.

American female adolescents measured on the Zimbardo Time Perspective Inventory (ZTPI) demonstrated less negativity about the future than males (Mello & Worrell, 2006). Within culture gender differences have been found. A strong positive correlation was found between greater future orientation, school belonging, school acceptance, and academic achievement for urban African American female adolescents. School belonging and a present time perspective were found be the significant predictors of lower academic achievement for urban African American male adolescents (Adelabu, 2007).

When considering culture, race, and FTP, one must consider the larger social context from which an individual student developed. Rural and urban African American adolescents were compared on FTP, hope agency ("a sense of determination in meeting one's goals") (Adelabu, 2008, p. 353) and ethnic identity. These measures all positively correlated to academic achievement (Adelabu, 2008). Furthermore, FTP, hope agency, and ethnic identity were predictive of academic achievement for urban and rural females. FTP was not a predictive element for rural or urban males. For seventh graders, hope agency and ethnic identity were predictors of academic achievement and for twelfth graders only ethnic identity was a predictor of academic achievement. In comparing rural and urban youth, hope agency and ethnic identity was predictive for the urban population. Hope agency was the only predictive factor for the rural youth's academic achievement. It was noted by the researchers that rural youth tended to have same-minority teachers in their schools. There was a supposition made that having strong ethnic

role models was a factor in developing a strong ethnic identity and heightened motivation to succeed (Adelabu, 2008).

Similarly, university students in the South Pacific had longer FTP scores, which correlated significantly with a mastery goal approach to learning and deep processing study strategies and stronger effort in learning (Phan, 2009). There were no gender differences found in this research. Males and females were seen as having the same drive for success learning and towards future goals. The authors attributed this as a possibility resulting from the deep economic troubles in the geographical region, which have led to a strong motivational approach to learning as the young people have internalized the need to succeed in the face of the economic adversity they have experienced (Phan, 2009). FTP is a useful cross-cultural measure for classroom motivational behavior. Dutch, Turkish, and Moroccan students in the Netherlands demonstrated a positive association of FTP with perceived instrumentality and effective learning strategies. FTP was found to have a regulatory effect on classroom behavior as seen in task motivation (Andriessen, Phalet, & Lens, 2006).

Students of minority status, either through culture and language or through racial difference, experience life with one foot each in two worlds. Their success in the mainstream environment can be affected by many factors. A teacher's role can have a significant impact on the developing relationship with a child who begins schooling speaking an alternative language other than English (Fumoto, Hargreaves, & Maxwell, 2007). Non-English speaking students had a significant increase in scores on the Closeness Scale of the Student teacher Relationship Scale (STRS) from the beginning to the end of their preschool year. During the same time period teachers observed a statistically small increase in the students' spoken language skills. This has implications in the importance of language skills for developing closeness within teacher-child

relationships as well as the need for teachers to be aware of the value of communication for this population.

Positive relationships within school contexts promote a variety of competency skills for elementary school children. Third to sixth grade children of color and their teachers judged relationship quality and school attitude within a research design that allowed students and teachers to be the raters (Rey, Smith, Yoon, Somers, & Barnett, 2007). Both student and teacher ratings demonstrated strong correlation with positive teacher-child relationships as predictors of positive rule compliance, interest in school, connectedness and involvement in school. Ewing and Taylor (2009) found the same effects for minority children and a positive teacher relationship with positive school behavioral adjustment as found with white children (Birch & Ladd, 1997). Contrarily, Burchinal et al (2002) found that teacher-child closeness was a significant predictor of language skills during early years for children of color but not for white children. Also, teacher-child closeness was more significantly and positively related to scores on the Peabody Picture Vocabulary Test for children of color than for white children.

Low income and minority children in kindergarten to fifth grade demonstrated significant gender differences in teacher relationships. Teachers reported girls having more closeness and less conflict with teachers than boys. When girls and boys were rated with the same positive relationship with the teacher, girls had better outcomes as measured at the end of school year assessments. Some of the advantage to girls was attributed to the possibility that girls begin school with an advantage in developmental maturity (Baker, 2006). In the Birch and Ladd (1997) study, teachers reported significantly more closeness in their relationships with girls and significantly more conflict in their relationship with boys. Similarly, girls were rated as more cooperative in their participation with an overall more positive attitude towards school.

Time: Developmental lines and FTP. Adolescents during middle and high school are developing a number of competencies needed towards adult roles. Supporting such growth is seen as useful and imperative (Eccles, Lord, & Midgley, 1991). Goal formation and realization of goals is a developmental skill that is closely tied to FTP (Husman & Lens, 1999). It can affect future career and life satisfaction (Lang & Carstensen, 2002). Goal formation among young adolescents tends to be of a short-term focus with less demand on delay of gratification and associated with a weaker orientation to the future (Steinberg et al., 2009). Older adolescents demonstrated the ability to develop more complex plans for their future when compared to younger adolescents unrelated to measures of cognitive ability growth (Nurmi, 1989a). Nurmi posits that, as adolescents grow, parents, peers and teachers play a role in encouraging mastery of developmental tasks that emphasize the future. These findings indicate the possibility of age related differences in FTP for younger and older adolescents and the possible complex relationship of FTP with the socializing influences of parents, peers and school experience

Lessing (1968) found a stronger positive correlation of length of FTP and age in his comparison to previous studies of the time. He established that there was a significant growth in the length of FTP from middle childhood to young adulthood. He noted that caution should be used in scoring the FTP from the two measures that he used. One required a temporal unit of years while the other measured FTP in hours or days. Lessing felt that this actually gave two separate scores: long-range FTP and short range FTP. His findings suggested a stronger correlation of age and growth of FTP when using a temporal unit of years and lower reliability with a temporal unit in hours or days.

A trend in growing adolescents is a change in time perspective that emphasizes the present. The FTP of middle and high school students were measured in a large (N = 722) sample

of 11 to 18 year olds. Older adolescents had scores associated more with satisfying present needs rather than concern about the past or the future (Mello & Worrell, 2006). Lennings, Burns, and Cooney (1998) sought to explore a difference in temporal perspective among adolescents and young adults. High school and university students were compared on FTP and personality correlates. The researchers were surprised to find that there were no significant differences in FTP between the groups even though it was believed, theoretically, that there would be a time perspective shift as adolescents age. This was attributed possibly to a very gradual shift in perspective that may be difficult to measure.

Horstmanshof and Zimitat (2007) investigated three age groups of university students common to Australia between the ages of 19-25 and in varied socioeconomic backgrounds. The oldest students (regardless of SES) had significantly higher scores for FTP, academic application (study behavior), academic orientation, (value of learning), use of meaning approach in study (deep or surface), engagement and hours spent preparing for classes than younger students. Students with higher FTP also positively correlated with academic application and academic orientation. Model 5 conceptualizes the experience of the macrosystem constructs as control variables and the parent, school and peer microsystem constructs on the self-system, effort, and expectation of success (Figure 5, p. 23).

Summary. The impact of race/culture, socioeconomic status and gender theoretically has impact on how individuals may view their future. These variables of the broader society at large often denote differences in opportunity, resources and feedback experiences in regard to competencies. In order to fully examine the influences on adolescent Expectations of success the multiple influences of the macrosystem must be considered. The bioecological model is a useful lens by which to observe these multiple influences. While the individual student brings a sense

of self to the world, that very self is a product of action, self-evaluation, and social structure (Gecas & Schwalbe, 1983). This dynamic view of the self sees humans deriving a sense of self from reflected appraisal of others as well as the self as an agent of action within a social context.

In the present study these variables will be used as controls in order to measure the potential impact of membership in a group that may offer societal advantage or disadvantage. In addition, a comparison of the responses of younger and older adolescents will shed light on potential developmental trends in the experience of FTP and details on possibly more influential social contexts. The lens of the bioecological model presents a layered and complex interaction of the self-system and social world experience. The representation of these interconnected forces through SEM will be able to shed light on their relative influences on the adolescent self, Effort and Expectations of success. The following chapter details how the present study intends to handle the data, steps toward model building, evaluation of models and interpretation to test the research questions

CHAPTER III: Methods

Subjects and Data Source

The data for this analysis was taken from the Alfred P. Sloan Study of Youth and Social Development, 1992–1997 (Schneider, 2013). The Teen Life Questionnaire (TLQ) data from year 1 included a 490-item questionnaire covering many aspects of adolescent life in three major social environments: family, school and peer groups. The TLQ was a modification of the instruments used in the National Educational Longitudinal Study, NELS: 1988-1994 (NELS) (United States Department of Education. National Center for Education Statistics, 1997). There were 977 respondents in the focal group and 2951 respondents in the cohort group, respectively in year 1. The focal and cohort groups were combined to create an appended data set with 3928 respondents for this analysis. Two versions of the survey were administered to 6^{th}, 8^{th}, 10^{th}, and 12^{th} graders across 12 sites encompassing 33 schools: 20 middle schools and 13 high schools. One version of the NELS questionnaire omitted certain questions considered unnecessary for middle school students such as "have taken the SAT." These questionnaire items are not considered in this analysis.

The twelve test sites chosen were geographically diverse (urban, suburban and rural) and over-representation was used to guarantee a sample that was ethnically representative of the total population. Eleven of the high schools used a comprehensive curriculum and two were specialized (mathematics/science and magnet language academy). The Sloan Study codebook (Schneider, 2013) has no mention of sampling weights or stratification used in the design of the study. The primary investigator of the study, B. Schneider (personal communication, September 8, 2017), informed me that there is no information on sampling weights and stratification for the Sloan Study. The Sloan Study (Schneider, 2013) intentionally included sites with significant

differences in economic conditions in order to explore if these differences impacted adolescent decision-making. Other criteria used for selection included gender, race and academic performance.

Questionnaire & Instruments

Survey interviews of adolescents from the Alfred P. Sloan Study of Youth and Social Development, 1992–1997 (United States) (Schneider, 2013) were chosen for this analysis. As reviewed above, the Sloan Study survey was a detailed look at the life and background of the participants, including family composition, respondent and family experiences, family member census vocational status, religious background, and other "housekeeping" details of large-scale data collection. In addition, the Sloan survey contained demographic variables such as ethnicity, sex, age, and socioeconomic status. The Sloan Study used a majority of questionnaire items from the NELS. The NELS' Codebook for Student-Level File, 1988–1994, Part 1 (United States Department of Education. National Center for Education Statistics, 1997), as well as the Sloan Study codebook (Schneider, 2013), suggest that composite variables may be made from questionnaire items that address similar measures, as mentioned in Chapter 2. This implies that latent constructs can be constructed.

As discussed in Chapter 1, the data set is a mixture of longitudinal and cross-sectional observations. The longitudinal sample consists of core focal groups and the cross-sectional samples are the cohort groups. The focal and cohort samples were mixed together at different waves of data collection (Schneider, 2013).

The focal students were chosen from school enrollment lists of students in grades six, eight, ten, and twelve. Criteria for student selection for all grade levels included: gender, race, ethnicity, and level of academic performance in order to produce a representative

> sample of students in general (in the school). Teacher ratings of students' academic success were also used to designate participants as high-, medium-, and low- ability. Based on these ratings, 24 students in each grade were chosen as the focal group. The core set of longitudinal data comes from this focal group.
>
> The cohort student samples represent one of the schools grades in which a panel of focal students was enrolled. The cohort samples are not longitudinal and are reselected for each wave of data collection. Information collected from the cohort sample is used as a means to measure characteristics of the focal sample such as school environments and peer networks. In addition, for some cross-sectional analyses, focal and cohort student data may be combined. In most schools the cohort sample was a random sample of 150 students unless a school had less than 150 students enrolled in one grade in which case the entire grade was sampled. At each wave the sample was refreshed to correct for attrition rates. Whenever possible, the focal sample was refreshed with students from the cohort sample. (Schneider, 2013, p. 5)

The Sloan Study measured various and important contexts of adolescent life in its survey, including but not limited to, aspects of life within the family, in school and with peers in order to capture adolescent needs and other life realities. Bronfenbrenner's (Bronfenbrenner & Ceci, 1994) bioecological systems theory helps us to view the individual in the many contexts they travel in: family, peers, school and career. These contexts are further influenced by individual self-knowledge, beliefs, skills, society, and culture at large (Bronfenbrenner, 1998). As reviewed in Chapters 1 & 2, the relevant variables in this analysis are student self-perceptions on self-esteem (Table A4), locus of control (Table A5), behavioral regulation (Table A6), valued future goals (Table A7), autonomy supportive parenting, parental school involvement (Table A8),

parental communication (Table A9), parent supervision (Table A10), parent autonomy support (Table A11), school climate (Table A12), student-teacher relationship (Table A13), perceived academic challenge (Table A14), and peer-shared values (Tables A15-A16). These spheres of influence that impact adolescents were measured through the questionnaire items that represent them based on prior research and established scales. (Tables A4-A16, pp. 185-189)

IRB Approval

This analysis is best classified as Non-Human Research (NHR) due to its base on individual data that is publicly available, where participants have been de-identified. The Rutgers' Institutional Review Board (IRB) granted this research as an exception due to classification NHR and gave approval for the research to proceed.

Data Screening

Data screening was carried out as recommended by Hair et al. (2009) and Tabachnick and Fidell (2007). Data was initially screened for plausible ranges and normality. No coding errors or implausible ranges were detected through inspection of variables. Variables not relevant to this analysis were dropped. Likert scale data was recoded where needed to preserve relationships (low to high) and as required by the selected software (Stata 15, see below in Software section) for appropriate screening as needed. For instance, all variables were relabeled in lower case, and missing values ("missing") and extended missing values ("don't know" and "multiple responses") were recoded so they may be clearly detected by the software. After recoding, data in the Focal and Cohort groups was appended to make one data set with an N = 3928 for further screening. Dummy coding was applied to all covariate variables (gender, race/ethnicity, socioeconomic class, and grade).

Missing values were noted in the Sloan data set and inspected for impact on the

demographic composition of the respondents. Each respondent was coded with a variable to represent the number of missing values on the 108 variables in consideration. Either a respondent had no missing data (N = 1,135), low missing (N = 2,073; less than 50 % of variables missing data), or high missing (N = 720; 50 % or more variables missing data). A variable was created to represent corresponding profiles of missingness. In an effort to inspect if missingness had an impact on the demographic composition of the data, each demographic variable was entered into a contingency table with the profile of missingness (see Tables A17–A21, pp. 190–193). Cramér's V, a measure of association of the frequency distribution between two categorical variables, was calculated for the association of missingness to demographics (Field, 2014). Each demographic category had a significant but negligible association with missingness. It was concluded that missing values would not significantly impact the analysis.

Missing values were addressed in all CFA's and SEM's with full information maximum likelihood (FIML) methodology (Acock, 2013; Kline, 2011). Two recommended options for handling missing data in statistical models like regression and SEM are FIML and multiple imputation (Acock, 2005, 2013; Graham, Olchowski, & Gilreath, 2007; Kenward & Carpenter, 2007; Kline, 2011; Tabachnick & Fidell, 2007). The SEM analyses for the Sloan Study used FIML techniques for missing data. FIML is comparable to multiple imputation techniques for missing data, especially when the sample size is large (Acock, 2005; Allison, 2003).

Data was initially screened for univariate and multivariate outliers. Univariate outliers were assessed using inspection of z-scores, histograms, boxplots, and probability plots with some issues of skewness and kurtosis. However, in a large sample, such as the Sloan data set, univariate deviations from normality do not tend to significantly impact an analysis (Hair et al., 2009; Tabachnick & Fidell, 2007). An alternative to screening individual variables is to

establish multivariate normality via the inspection of residuals after analysis (Hair et al., 2009; Tabachnick & Fidell, 2007). A random number within a chi-square distribution, generated with a seed for reproducibility, was produced. All quantitative variables considered for the analysis were regressed onto the random number. The residuals of the regression were inspected for normality assumptions. A histogram, PP- and QQ-plots of the residuals demonstrated a normal distribution. The scatter plot of residuals demonstrated an even spread along the y-axis but had a slight skew on the x-axis (Figures A1-A4, p. 196–197). This was not expected to affect the data negatively due to the large sample size (Hair et al., 2009).

Multivariate outliers were screened using the Mahalanobis distance statistic and tested at a conservative level of significance ($p < 0.001$) (Tabachnick & Fidell, 2007). In accordance with a chi-square distribution with 108 degrees of freedom, respondents with a Mahalanobis distance score of 159.162 were considered for deletion. This totaled 100 respondents. Inspection of the demographic representation of these respondents found no impact in the composition of the demographic representation after outlier respondents were removed (see Tables A22–A25, pp.194-195).

Study 1: EFA's and Construct Exploration

Study 1 centered on latent constructs (Byrne, 2006; Hair et al., 2009; Kline, 2011; Tabachnick & Fidell, 2007). It consisted of a set of EFA's, each of which focused on a particular collection of items from the Teen Life Questionnaire that were hypothesized to define a specific construct that emerged conceptually from prior work (Del Rosso, 2015) and theoretically have an impact on adolescent future expectation of success as a first stage in model building (see chapters 1 and 2). The select items from the Teen Life Questionnaire were compared to established measurement scales for the constructs of interest.

EFA model specification. The suggested theoretical models in this analysis express a proposed structure to the influences on adolescent Expectations of success. This stage of the analysis refined the sets of indicator variables (Tables A2–A16, pp. 185–189) theoretically hypothesized above to represent certain latent variables within the Bronfenbrenner framework for modeling Expectations of success in adolescents. The results of Study 1was a group of latent constructs consisting of a dependent variable that represented the characteristics of Expectations of success and related latent constructs from the domains of the self, parents, school, and peers that impact adolescents future expectations.

Exploratory factor analysis (EFA). Preliminary inspection of the Sloan data set, as well as previous research I have conducted (Del Rosso, 2015), demonstrated the possibility of building latent constructs that are relevant to adolescent Expectations of success from the questionnaire items as indicator variables. That study began with a series of EFA's utilizing the factor analysis approach in order to provide an initial test of the statistical construct validity of each of the proposed latent variables as defined above and in Tables A1–A16, pp. 184–189. Each latent variable was explored utilizing questionnaire items from the Sloan dataset as indicator variables. The questionnaire items as grouped in Tables A2–A16 were used for each EFA in order to develop the latent constructs for Study 2. As discussed above, these possible indicator variables have been demonstrated to represent the proposed constructs in previous research.

A factor is a linear combination of variables that measure a common aspect of the construct while capturing a unique aspect of that construct not addressed by the other variables (Hair et al., 2009; Tabachnick & Fidell, 2007). Analysis considered standard practice including examination of eigenvalue, scree plot, correlation coefficients, factor loadings, and decisions on

rotation (Hair et al., 2009; Tabachnick & Fidell, 2007). Promax rotation was used as the preferred choice for large data sets as it can account for correlated factors (Fabrigar, Wegener, MacCallum, & Strahan, 1999) (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Measures of factorability were considered including correlations among variables |> .30|, Kaiser-Mayer-Olkin Test (KMO), and inspection of the anti-image correlation coefficients, which are the negative values of the partial correlations, therefore, values < |.32| are sought for practical and statistical significance (Hair et al., 2009; Tabachnick & Fidell, 2007). These measures indicate if the variables relate to one another in a meaningful way and are appropriate for factor analysis. Convergent validity was established through inspection of factor loadings. A minimum factor loading of |0.32|, which indicates that 10% of the item variance was explained by the factor (Tabachnick & Fidell, 2007), and an average factor loading of 0.7 or greater was sought. When necessary, factor reduction was applied by removing variables with low contributions to variance and/or weak squared multiple correlation (SMC). SMC is a measure of the level of variance of the latent construct explained by the set of the predictor variables (Meyers, Ganst, & Guarino, 2017). Lower SMC values indicate the observed variable contributes less to the explanation of variance of the construct. The SMC for each observed variable is also a measure of item reliability in the analysis and is a function of loading estimates (Hair et al., 2009; Tabachnick & Fidell, 2007). The goal in each EFA was to reduce the observed variables to a single factor that is a reliable and valid estimate of the specific latent construct. In addition, discriminant validity through examination of factor loadings and measures of internal consistency for the resulting constructs was considered for the factors that emerged from EFA (Tavakol & Dennick, 2011).

Missing data in the datasets for the EFA's will be addressed with the approach outlined by Truxillo (2005). This approach utilizes ML with the expectation-maximization (EM)

algorithm to estimate the covariance matrix in the presence of missing data. Once an EM estimate of the covariance matrix is obtained, a factor solution is generated. Estimating a covariance matrix while limiting standard error bias can be done by specifying the nominal size for the analysis (Truxillo, 2005).

Two measures of internal consistency, Cronbach's Alpha and Omega values, were applied during the exploratory work of factor analysis. Cronbach's Alpha has been a traditional reliability instrument for decades (Cronbach, 1951). It has become criticized in recent years due to limiting assumptions, sensitivity to scale item number, and for its single point estimate form (Cronbach & Shavelson, 2004; Sijtsma, 2009). The Omega value contributes additional information to the reliability of a factor structure through both point and internal estimation (Dunn, Baguley, & Brunsden, 2014). Each individual latent construct was measured in a CFA for reliability and validity. A measure of construct reliability, the Raykov reliability coefficient (RRC) (squared sum of unstandardized loadings time factor variance divided by the numerator plus sum of unstandardized error variances), was calculated with the goal of > 0.7 (Hair et al., 2009). A measure of convergent validity, the average variance extracted (AVE) (sum of squared standardized loadings divided by the number of indicators), was inspected with the goal of > 0.5 (Hair et al., 2009). Strong internal consistency is a measure that the observed variables all consistently represent the same latent construct. The Sloan Study is a rich data set with the possibility of producing theoretically supported latent constructs towards a model of adolescent Expectations of success with a large sample size (N = 3928 for focal and cohort groups, year 1). Of course, the use of publicly available data could put the researcher at a disadvantage, as the data collection may not have originally considered certain latent construct details. Therefore, there may be limitations in the available measures of a particular construct.

Study 1 was crucial and informative to the development of Study 2. It provided the latent constructs needed for model building to support the theoretical models of Expectations of success proposed for this analysis. All latent constructs that were realized from the data in Study 1 had adequate reliability and validity measures for inclusion in a SEM. Study 2 continued to build and test the theoretical models of adolescent success expectations.

Study 2: Latent Variable (CFA & SEM) Models

Study 2 centered on the use of SEM. In SEM, latent variables represent the underlying constructs as defined by observed indicator variables in a measurement model (Bollen, 2002; Byrne, 2006; Kline, 2011). The relationships between the variables in the measurement model are known as the structural model (Bollen, 2002; Byrne, 2006; Kline, 2011). Structural models depict theoretical dependent relationships between the variables in the measurement model (Byrne, 2006; Kline, 2011). Exogenous constructs are not dependent on another construct while endogenous constructs may be dependent on either exogenous or endogenous constructs (Kline, 2011).

SEM offers the advantage of calculating direct and indirect pathways and the examination of a hypothesized set of relationships. According to Kline (2011), a structural equation model is required to have model degrees of freedom of at least 0 and every latent variable (including residuals) must be assigned a scale. These requirements do not assume identifiability of the model (Kline, 2011). In order to uniquely estimate all of its parameters it is imperative that a structural model be just-identified or overidentified (Kline, 2011). It is not possible to find a solution to an under-identified model as it lacks information, by definition. In a just-identified model the number of free parameters and observations are equal and in an overidentified model there are more observations than parameters to be estimated. The models

proposed in the present analysis are all recursive models and so, are always identified (Kline, 2011). In addition, "if a standard [confirmatory factor analysis] CFA model with a single factor has at least three indicators, the model is identified (Rule 6.4) [and] if a standard CFA model with 2 or greater factors has 2 or greater indicators per factor, the model is identified" (Kline, 2011, p. 138). The proposed theoretical models in this analysis adhere to those guidelines.

A disadvantage of SEM is the requirement of large sample size. The most common estimation method used in SEM is maximum likelihood (ML). Traditionally, this method has required that sample size be considered as a ratio of cases to the number of model parameters that require statistical estimates and should be no less than 20:1 (Jackson, 2003). In addition, it is recommended that SEM be applied only to sample sizes greater than 200 due to possible limits in statistical power. In recent years sample size guidelines have been challenged (Wolf, Harrington, Clark, & Miller, 2013). Sample size can be configured within an acceptable range and is dependent on a variety of elements. These include the number of latent variables in the model, the amount of indicators on latent variables, the size of factor loadings, effect sizes in mediation models, and percent of missing data (Wolf et al., 2013). This analysis considered sample size guidelines in model building and analysis.

The proposed structural models in Study 2 are offered to best explain adolescent expectation of success. The Sloan study contains many observed variables that can be used as indicator variables of latent constructs. Previous research has demonstrated that there are latent variables tapped by multiple questionnaire items in the Sloan data set (Del Rosso, 2015). Using them singularly would not be as efficient and/or powerful as using them in a latent framework such as SEM (Kline, 2011; Tabachnick & Fidell, 2007). Furthermore, "using … [observed] items as indicators of a latent variable rather than components of a scale allows for estimation

and removal of the measurement error associated with the observed variables" (Ullman, 2006, p. 35). The use of SEM offers an estimate of reliability of the measurement of the relationships among the factors. In addition, SEM simultaneously depicts complex interrelationships that simpler analysis techniques (i.e. multiple regression) cannot capture, such as mediation (Hair et al., 2009; Tabachnick & Fidell, 2007). In SEM, the network of relationships among factors, latent or observed, is a primary focus (Byrne, 2006; Kline, 2011; Tabachnick & Fidell, 2007). Study 2 began with a series of CFAs to test and validate the measurement models based on the constructs from the EFA's in Study 1 so that they could next be used in structural models of SEMs. Study 2 continued with the creation and analysis of a family of SEMs built up in multiple stages (Acock, 2013; Byrne, 1994, 2006; Hair et al., 2009; Kline, 2011; Tabachnick & Fidell, 2007). The goal of the SEMs was to seek an understanding of the relationship of the expectation of success of adolescents as a function of the influences that are present within the variety of adolescent social environments in light of Bronfenbrenner's (1994) bioecological model.

The final SEM models were tested using a cross-validation approach as described by Byrne (1994, 2006) and MacDonald (2016). Invariance testing is an important step in developing structural models in order to better assure that observed relationships are valid (Vandenberg, 2002; Vandenberg & Lance, 2000). The combined focal and cohort groups in year 1 (N = 3,828) were randomly divided into a 60% calibration sample (N = 2,297) for model specification and building and a 40% (N = 1,531) validation sample for testing the final fitted SEM model. The initial model development, including the EFAs in Study 1 and the CFAs and SEM's in Study 2, were carried out on the calibration sample. Typically, a 50-50% split has been used, although James, Witten, Hastie, and Tibshirani (2013) recommend a 25% validation sample for many data science models. Using 60% of the Sloan survey for the calibration sample

will provide more observations than the typical 50%, which will be useful because more data will be available for the proposed analyses in Studies 1 and 2, whereas the validation sample will only be used once in order to test the final SEM produced at the end of Study 2.

Confirmatory factor analysis (CFA)/Measurement model. Model building was completed in line with accepted theoretical relationships in consideration of Bronfenbrenner's (Bronfenbrenner & Ceci, 1994) bioecological model. As discussed above, a CFA was performed to test each related measurement model, including measures of RRC and AVE. In addition, the AVE was compared to the squared correlations among the latent factors as a robust measure of discriminate validity (Hair et al., 2009; Tabachnick & Fidell, 2007). The CFA is a test of the measurement relationships between indicator variables and their associated construct. It differs from an EFA in that the researcher determines the number and set of factors a priori based on the theoretical relationships being tested (Brown, 2015; Tabachnick & Fidell, 2007). It is different from a SEM analysis in that it only assesses the latent constructs and their inter-correlations, that is, no directional pathways (Brown, 2015; Tabachnick & Fidell, 2007). This enabled further assessment of construct reliability and validity and allowed a confirmation or rejection of the preconceived use of constructs to represent factors that were determined via the EFA and theoretical support (Hair et al., 2009). Modification indices suggested in the analysis indicate the amount the chi-square would be reduced through building pathway correlations between indicator variables (Kline, 2011; Tabachnick & Fidell, 2007). They will be considered if they improve the model and adhere to strong theoretical sense. Guidelines for modifying measurement models and for recommended goodness of fit statistics will be considered (Bagozzi & Yi, 1988; Hair et al., 2009).

Structural equation modeling. A SEM was used to test the causal structure of the

proposed models theoretically hypothesized to impact Expectations of success among adolescents. The results of each SEM were analyzed in light of the bioecological model to provide insight into the relationships of the elements of self and adolescent social contexts on Expectations of success.

Goodness of fit indices measure the overall fit of the SEM to the underlying data (Byrne, 2006; Kline, 2011). These indices are a result of the comparison of the estimated covariance matrix of the theoretical model to the observed covariance matrix of the data. When these values are close the model is said to fit the data. These indices include, but are not limited to, chi-square statistic, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI) (Hair et al., 2009; Kline, 2011).

The chi-square statistic denotes good model fit when it is low as that is an indicator of small differences between the theoretical and observed matrices (Hair et al., 2009; Kline, 2011). Yet, number of variables and sample size influence this statistic since it is, by definition, a function of the sample size, which tends to give poor indices of fit for even potentially well fitting models if the *N* is extremely large. Therefore, the practice in the field is to cite additional indices of fit, e.g., RMSEA that takes into account sample size (Tabachnick & Fidell, 2007). The RMSEA is a measure of misfit of the model per degree of freedom. It includes elements of model complexity and sample size in its computation and is an absolute fit index. RMSEA measures the extent to which the researcher's model reproduces the sample covariance matrix. Lower values denote a better fit of the model (Hair et al., 2009; Kline, 2011; Lei & Wu, 2007).

The CFI assesses the relative improvement in fit of the researcher's model compared to an independence (null) model (assumes zero population covariance among observed variables). The TLI considers model complexity in a comparison of normed chi-square values for the null

and specified models. The CFI and TLI are incremental fit indices. They measure an increase in fit relative to the null model. Larger values indicate better fit (Hair et al., 2009; Lei & Wu, 2007).

Each SEM was considered for respecification to maximize fit to the data within the proposed theoretical structure. Modification indices (Lagrange Multiplier &Wald W statistics) and goodness of fit indices were considered in light of the Bronfenbrenner bioecological framework to guide decisions concerning model respecification (Bagozzi & Yi, 1988; Hair et al., 2009; Kline, 2011). The structural models were compared using accepted comparative fit indices reviewed above to evaluate fit to the data (Bagozzi & Yi, 1988; Hair et al., 2009). If any goodness of fit test indicated misspecification or poor fit of the model, respecification of the model was considered (Brown, 2015; Hair et al., 2009; Tabachnick & Fidell, 2007).

As mentioned above, a cross validation technique was used to test the adequacy of the final SEM (Acock, 2013; Byrne, 1994, 2006). The final SEM solution, as judged by the goodness of fit indices, was run simultaneously on both the calibration and validation data samples as two separate groups in a multiple group SEM. Indices of goodness of fit appropriate for evaluating multiple group SEM were examined to determine whether the same SEM fits both the calibration and validation groups.

Invariance testing for all models followed achieving adequate model fit in SEM and applied five levels: configural invariance (models demonstrate the same set of indicators to be relevant to the same latent construct), similar measurement loadings, similar structural loadings, similar measurement errors, and similar structural errors (Acock, 2013; Byrne, 1994, 2006). These steps were applied in a step-by-step fashion with each level compared to the previous level.

The likelihood ratio test based on the unstandardized solutions were used as comparison for invariance as they represent the form of the relationship between variables in the model as opposed to the strength of the relationship represented by standardized coefficients (Acock, 2013). If a model failed at any level of invariance an inspection of parameters (Score test/Lagrange multiplier test) was conducted to isolate any invariant loadings or error terms. It has been noted that finding similar measurement and structural regression coefficients is accepted as a rigorous test of invariance. Small variations in measurement and structural errors are often an expected result of model comparisons between independent samples (Acock, 2013; Byrne, 1994, 2006). In light of this, any offending error parameters were freed and invariance retested. If measurement or structural loadings were found to be not invariant the construct was determined to be invariant and the model revised.

Proposed Models

As noted in Chapter 2, there were a total of five proposed SEMs (Figures 1-5, pp. 21–23). Model 1 (Figure 1) had its primary focus testing self-system constructs. It correlates the elements of the self-system that are hypothesized to be related to future expectations: Self-esteem, Valued future goals, Behavioral regulation, and Locus of control. This model, and all subsequent models, includes the demographic variables SES, race/ethnicity, and age as manifest variables. This beginning model makes the conjecture that Self-system constructs influence perceived Effort that a student applies to academics which, in turn, mediates the relationship of the Self-system and Expectations of success.

The following models each place a contextual influence on the first model variables. Model 2 (Figure 2) had as its primary focus testing self-system constructs and parent microsystem constructs. It includes the contextual influence of parenting on the first model

variables. The characteristics of parenting associated with influencing future expectations are autonomy support, school involvement, and communication. Model 3 (Figure 3) had as its primary focus testing self-system constructs and school microsystem constructs. It includes the contextual influence of school on the first model variables. The characteristics of school associated with future expectations are climate, student-teacher relationships, and level of perceived academic challenge. Model 4 (Figure 4) had as its primary focus testing self-system constructs and peer microsystem constructs. It includes the contextual influence of peers on the first model variables. The characteristics of peers associated with future expectations are related to the academic and social focus of an adolescent peer group. Model 5 (Figure 5) had as its primary focus testing self-system constructs and parent, school, and peer microsystem constructs together. It includes all of the contextual influences on the first model variables. Each hypothesized SEM was subject to the series of analyses specified above to test and refine each one to create final valid models.

The initial specified model was revised after completion of Study 1. It began with a simple relationship between the latent constructs, self-esteem as a predictor of adolescent Expectations of success. These relationships are a test for Hypothesis 1. Subsequently more complex SEMs introduced different levels of environmental contexts on the individual. The final model tests the influences on expectation of success utilizing the full framework of the Bronfenbrenner PPCT model. The more complex models were a test for Hypothesis 2. Each model included the observed variables of socioeconomic status, race/ethnicity, gender and age as observed controls. The impact of control variables will be explored as hypothetical influences on Expectations of success in Hypotheses 3 and 4.

All proposed theoretical SEMs were contingent on the factors that were extracted during

Study 1 of this analysis. Furthermore, it was hypothesized above in Chapters 1 and 2, that demographic disadvantages in relation to minority status, being female, and/or socioeconomic class may create an awareness of limited access to resources including, but not limited to, education, career role models, and career opportunities so that adolescent Expectations of success may be significantly and negatively impacted. The inclusion of an age related control variable would explore the hypothesis that younger and older adolescents may demonstrate significantly different relationships to the constructs that influence adolescent future expectations.

Background demographic influences discussed by Bronfenbrenner (1995) were included in the models through dummy coding. The full reference group for comparison was white, male, middle class, and in high school. Standardized and unstandardized coefficients were inspected to determine if control group membership had significantly higher or lower measures of a construct in relationship to the reference group or non-significant differences. The two levels for grade were coded into younger (grades 6^{th} – 8^{th}) and older (10^{th}-12^{th}) using the older group (high school) as the reference group and the middle school as the comparison group. The five levels for socioeconomic class were coded into four variables using middle class as the reference group: poor, working class, upper middle class, and upper class. The five groups for race/ethnicity were coded into four variables with white as the reference group: Native Americans, Asian, Hispanic, and Black. Gender was coded into 2 groups with male as the reference group and female as the comparison group. The demographic variables represent the influences of the macrosystem on the models of expectation of success and the grade group variable represents an examination of the Time component in the PPCT bioecological framework.

The above models hypothesize that specific elements of the social contexts in which adolescents live influence the self-system which, in turn, mediates the relationship of social constructs on perceived effort that a student applies to academics which, in turn, mediates the relationship of self-system constructs on Expectations of success. All of the previous models also include the influence of demographic and age variables. The last model uses multiple latent variables to test the relationship of social contexts on Expectations of success. In the view of Bronfenbrenner's bioecological model, this last model includes the self-system, the microsystems (represented by various social contexts), the macrosystem (represented by the demographic variables) and time (represented by the grade variable). The macrosystem and time variables are covariates that test their varied influences as differences in pathway parameters within different models.

Direct Effects (DE), Indirect Effects (ID), and Mediation

Direct, indirect, and mediation effects were explored. A mediator is a variable that plays a significant role in the relationship between an independent variable to a dependent variable in regard to why and how effects between them occur (Baron & Kenny, 1986). Mediation tests the possibility that another construct intervenes between two or more constructs. This analysis includes data that was collected at one time point, and so, represents a slice of time within the cyclic processes of parental, school, and peer relationships in their influence on the self-system. There are no discrete time points between cause and effect in the adolescent socialization process that involves social evolution and reciprocity. Therefore, direct and indirect effects between the variables in this analysis demonstrate mediation as facilitation of the independent variable's effect onto the dependent variable through the mediator.

Traditional tests for mediation include a comparison of effects with and without the

presence of the mediator (Baron & Kenny, 1986). In recent years this traditional approach has been supplanted with new statistical models that include bootstrapping (Preacher & Hayes, 2004, 2008; Zhao, Lynch, & Chen, 2010). The direct and indirect effects were analyzed for potential partial mediation. The results were interpreted using the typology of mediations and non-mediation with five categories outlined by Zhao et al. (2010). Previous classification of mediation included three categories (no mediation, partial, and full) depending on the outcome of the direct effects. The modern approach emphasizes the magnitude and the significance of the indirect effects (Zhao, Lynch, & Chen, 2010). A new typology helps to explain mediated relationships. At the very least, there may be no mediation, as indicated by a direct only effect or by no effect. Complementary mediation is realized when direct and indirect effects are significant and direct effects are positive. This is represented in part by Baron and Kenny's (1986) partial mediation. Competitive mediation is a similar scenario, except that the direct effect is negative. In competitive and complementary mediation, the researcher is directed to seek other possibly omitted mediators in the model that are in the "direct" path. These mediators would most likely have a similar sign as that of the direct effect. Zhao (2010) sees this as an opportunity to guide future research. Indirect-only mediation occurs when the indirect effect is significant and the direct effect is non-significant. It is an indicator of mediation consistent with the researchers hypothesized theoretical framework and overlaps the Baron and Kenny pattern of full mediation.

Software

All analyses was performed using Stata Version 15 (StataCorp, 2015a). EFAs were done using the *factormat* command, which utilizes the EM approach outlined by Truxillo (2005) to estimate covariance matrices for analysis if missing data is present ("Stata FAQ: How can I do

factor analysis with missing data in Stata? UCLA: Statistical Consulting Group.," n.d.). SEM, including CFA, will be done using the *sem* command, which can use the full information maximum likelihood (FIML) technique to generate a solution in the presence of missing data, (StataCorp, 2015b). The use of FIML is specified by using the *mlmv* (maximum likelihood missing values) method, which obtains parameter estimates by considering all the data (StataCorp, 2015b). Mediation analyses and bootstrapping for bias-corrected confidence intervals was carried out using the *sem* and *bootstrap* commands.

Summary. The objective of Study 1 was to present a set of theoretical constructs that have been demonstrated in the literature to impact adolescent expectations of future success and to extract observed variables from the Sloan Study data set that form such constructs (including the dependent variable, expectation of success) in order to test their hypothesized relationships as stated in the research questions. The analysis included model specification, model identification, and exploratory factor analysis to verify the validity of the models and the constructs for model building. The objective of Study 2 was to test the measurement model of each theoretical model with the Sloan Study data set, examine model fit estimates, consider respecification, and interpret estimates. Revised models are considered and, finally, results reported. Within this latter analysis mediation and group differences will be examined and recorded.

Study 1 resulted in latent constructs demonstrated by theory and previous research to have impact on adolescent expectation of success and Study 2 resulted in models that inform the researcher of the relative influences of the self-system, microsystem and macrosystem constructs on such expectation. Furthermore, inclusion of control variables of socioeconomic class, race/ethnicity and gender allowed for examination of macrosystem influences on perceived Expectations of success. The grade variable makes possible the examination of potential

changes in perceived expectations over time during young and later adolescence.

The results of this research has the potential to gain a better understanding of adolescent functioning across middle and high school and the impact of cultural, social and self-system variables on adolescent Expectations of success. This information could be crucial for informing future research on adolescent functioning in and out of school settings, understanding successful performance as well as addressing the needs of adolescents who may struggle with capturing positive future expectations for themselves. There is potential for commentary on supporting adolescent self-system functioning, informing supportive parenting practices and school structure recommendations.

CHAPTER IV: Results

Study 1

A series of EFA's were performed to extract reliable and valid constructs from the Sloan data that were potential influencers to adolescents' expectations of future success. The goal of each EFA was to explore those observed measures from the Sloan study that represented similar measures of established constructs from previous research. All EFA's were conducted using the calibration data set (N = 2297), a 60% random sample of the full data set (N = 3828). Maximum likelihood estimation with consideration for missing values was used to estimate all models as described above. This FIML approach is recommended for use in SEM in the presence of missing values in order to maximize the information taken from the majority of respondents (Acock, 2013; Kline, 2011).

The following is a description of methods and decision-making through this exploratory work for the proposed theoretical constructs: Expectations of success, Effort, Self-esteem, Locus of control, Behavioral regulation, Valued future goals, Parent autonomy support, Parent school involvement, Parent communication, Parent supervision, School climate, Student-teacher relationship, Perceived academic challenge, and Peer shared values. These constructs are contained within the larger social contexts that adolescents perform within representative of the Bronfenbrenner bioecological model: the self-system, and the microsystems of parent/family, school, and peers.

The Self-System

Expectations of success. An exploratory factor analysis of the 12 individual survey items (Table B1, p. 198) representing the anticipated future of adolescents in this study was performed on the data. Measures of factorability indicated that the data were suitable for factor

analysis (majority of correlations between variables > |0.30|; overall KMO = 0.903; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|) (Hair et al., 2009; Tabachnick & Fidell, 2007). Initial assessment (Table 1, p. 84) yielded a 7 factor solution, including three factors with eigenvalues > 1 that cumulatively accounted for 78.7% of the total variance. Factor reduction was applied by removing variables with low contributions to variance and/or weak SMC. The goal was to reduce the observed variables to a single factor as a reliable and valid estimate of the construct, Expectations of Success. The final solution (Table 2, p. 84) yielded a single factor with three observed variables (chances R will have a job that pays well, chances that R will be able to own home, and chances R will have a job s/he enjoys,), eigenvalue = 2.011, with adequate measures of reliability and validity (average factor loadings = 0.743; Alpha = 0.855; Omega =0.859; RRC = 0.860; AVE = 0.670). These measures assure construct reliability and discriminant and convergent validity. This factor's face value represents student anticipation of economic success and career contentment, two areas that were found in discussions of adolescent future expectations (Nurmi, 1989a).

Effort. An exploratory factor analysis of the four individual survey items (Table B2, p. 199) representing effort in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis (all correlations between variables > |0.30|; overall KMO = 0.736; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|). Initial assessment (Table 3, p. 84) yielded a one-factor solution (eigenvalue = 1.60). Factor reduction was not necessary. This single factor included four observed variables (R tries as hard as possible in math, R tries as hard as possible in English, R tries as hard as possible in history, R tries as hard as possible in science), eigenvalue = 1.60, which produced mixed

Table 1
Initial Factor Loadings: Expectations of Success

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Uniqueness
chances_grad_hs					0.801			0.331
chances_college					0.753			0.396
chances_job_pays	0.611							0.308
chances_own_home	0.928							0.149
chances_job_enjoys	0.357	0.384						0.368
chances_happy_family		0.945						0.123
chances_good_health		0.412						0.443
chances_anywhere						0.956		0.000
chances_respected			0.439					0.417
chances_friends				0.892				0.081
chances_life_better							1.010	0.000
chances_children_better							0.609	0.531

Note. Blanks represent loadings < |.32|

Table 2
Final Factor Loadings: Expectations of Success

	Factor1	Uniqueness
chances_job_pays	0.828	0.315
chances_own_home	0.880	0.226
chances_job_enjoys	0.743	0.448

Table 3
Initial and Final Factor Loadings: Academic Effort

	Factor1	Uniqueness
tries_hard_math	0.677	0.542
tries_hard_English	0.641	0.589
tries_hard_history	0.572	0.673
tries_hard_science	0.633	0.599

results for measures of reliability and validity (average factor loadings = 0.8168; Alpha = 0.7125; Omega = 0.7260; RRC = 0.715; AVE = 0.399; all SMC's < 0.309.). These measures indicated a problem with convergent validity. Low values for AVE (<0.5) indicate that the factor contains more error than variance explained by the imposed latent factor structure (Hair et al., 2009). It would follow that removing variables with the highest error variance may improve AVE. The highest error variance (.673) and also the lowest SMC value (.239) belonged to the item "R tries as hard as possible in history". After its removal overall AVE did not improve to an acceptable level (0.429) and RRC diminished to an unacceptable 0.683. It was determined that Effort was not a viable latent construct represented by this data and was omitted from the models.

Self-esteem. An exploratory factor analysis of the eight individual survey items (Table B3, p. 199) representing the self-esteem of adolescents in this study was performed on the data. Measures of factorability indicated that the data were suitable for factor analysis (majority of correlations between variables > |0.30|; overall KMO = 0.832; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|). Initial assessment (Table 4, p. 88) yielded a four-factor solution, including two factors with eigenvalues > 1 that cumulatively accounted for 81.1% of the total variance. Factor reduction was applied by removing variables with low contributions to variance and/or weak SMC. The goal was to reduce the observed variables to a single factor as a reliable and valid estimate of the construct, Self Esteem. An interim solution yielded a single factor with four observed variables (R feels good about self, R feels s/he is a person of worth, on the whole R is satisfied with self, R feels useless at times), eigenvalue = 1.737, which produced mixed results for measures of reliability and validity (average factor loadings = 0.640; Alpha = 0.713; Omega = 0.744; RRC = 0.727;

AVE = 0.434; SMC's = 0.398, 0.329, 0.405, 0.112). These measures indicated a problem with convergent validity. As previously discussed, removing variables with the highest error variance may improve AVE. The highest error variance (0.856) and also the lowest SMC value (0.112) belonged to item "R feels useless at times". After its removal overall AVE improved to an acceptable level (0.531) and RRC rose to 0.773. The final solution (Table 5, p. 88) (eigenvalue = 1.593) retained the remaining three observed variables with adequate measures of reliability and validity (average factor loadings = 0.727; Alpha = 0.855; Omega =0.859; SMC's = 0.564, 0.599, 0.468). These measures assure construct reliability and discriminant and convergent validity. This factor's face value represents student self-esteem as reflected in scale items on the Rosenberg Self-Esteem scale (Robinson et al., 1991).

Locus of control. An exploratory factor analysis of the six individual survey items (Table B4, p. 199) representing locus of control in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis except for the covariance matrix values (about half of the correlations between variables > |.30|; overall KMO = 0.743; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |.32|). Initial assessment (Table 6, p. 88) yielded a three-factor solution including two factors with eigenvalues > 1 that cumulatively accounted for 89.6% of the total variance. Factor reduction was applied by removing variables with low contributions to variance and/or weak SMC. The goal was to reduce the observed variables to a single factor as a reliable and valid estimate of the construct, Locus of Control. An interim solution (Table 7, p. 90) yielded a single factor with four observed variables (R does not have enough control over life, when getting ahead somebody/thing stop R, R feels plans hardly ever work out, chance, luck very important for R's life), eigenvalue = 1.50, which produced mixed results for measures of reliability and

validity (average factor loadings = 0.597; Alpha = 0.6761; Omega =0.695; RRC = 0.685; AVE = 0.374; SMC's = 0.195, 0.324, 0.337, 0.127.). These measures indicated a problem with reliability and convergent validity. The item 'luck very important for R's life' had the highest error variance (0.827) and also the lowest SMC value (0.127). After its removal overall AVE did not improve to an acceptable level (0.442) and RRC was an unacceptable 0.694. It was determined that Locus of Control was not a viable latent construct represented by this data and was omitted from the models.

Behavioral regulation. An exploratory factor analysis of the eight individual survey items (Table B5, p. 200) representing the anticipated future of adolescents in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis except for the covariance matrix values (about half of the correlations between variables > |0.30|; overall KMO = 0.903; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |.32|). Initial assessment (Table 8, p. 90) yielded a four factor solution, including two factors with eigenvalues > 1 that cumulatively accounted for 79.5% of the total variance. Factor reduction considered variables with low contributions to variance and/or weak SMC. The goal was to reduce the observed variables to a single factor as a reliable and valid estimate of Behavioral regulation. The final solution (Table 9, p. 90) yielded a single factor with three observed variables (R transferred for disciplinary reasons, R picked up by police, how many times R was arrested), eigenvalue = 2.335, with adequate measures of reliability and validity (average factor loadings = 0.881; Alpha = 0.855; Omega =0.913; RRC = 0.915; AVE = 0.778). These measures assure construct reliability and discriminant and convergent validity. This factor's face value represents student struggle with behavior regulation that may predict difficulty with forming and carrying out a plan towards future goals.

Table 4
Initial Factor Loadings: Self-esteem

	Factor1	Factor2	Factor3	Factor4	Uniqueness
feels_good_self	0.8042				0.4088
person_of_worth	0.502				0.491
do_things_well				0.9848	0
satisfied_with_self	0.7074				0.4313
feels_useless			0.8876		0.2513
feels_not_good			0.611		0.3988
not_proud		0.7746			0.3839
emotionally_empty		0.6002			0.4583

Note. Blanks represent loadings < |.32|

Table 5
Final Factor Loadings: Self Esteem

	Factor1	Uniqueness
feels_good_self	0.7525	0.4337
person_of_worth	0.6639	0.5592
satisfied_with_self	0.7653	0.4144

Table 6
Initial Factor Loadings: Locus of Control

	Factor1	Factor2	Factor3	Uniqueness
not_enough_control	0.3836			0.7271
good_luck_more_imp		0.9995		0
somebody_stops	0.7673			0.458
plans_hardly_work	0.6137			0.398
certain_plans_work			0.6312	0.6071
chance_luck_impt		0.3734		0.7063

Note. Blanks represent loadings < |.32|

Valued future goals. An exploratory factor analysis of the 13 individual survey items (Table B6, p. 200) representing the valued future goals of adolescents in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis except for the covariance matrix values (a majority of the correlations between variables < |.30|; overall KMO = 0.763; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |.32|). Factor analysis was attempted even with this initial finding to explore if variables that did have adequate correlations might represent the latent construct 'Valued future goals'. Initial assessment (Table 10, p. 91) yielded an 8-factor solution including two factors with eigenvalues > 1 that cumulatively accounted for 56% of the total variance. Factor reduction was applied by removing variables with low contributions to variance and/or weak SMC. The goal was to reduce the observed variables to a single factor as a reliable and valid estimate of the construct, Valued future goals. The final solution (Table 11, p. 91) yielded a single factor (eigenvalue = 1.37) with four observed variables (important finding right person to marry, important to be able to find steady work, give own children better opportunities, important having children), which produced low measures of reliability and validity (average factor loadings = 0.564; Alpha = 0.6761; Omega =0.659; RRC = 0.631; AVE = 0.340; SMC's = 0.325, 0.139, 0.206, 0.249.). The item 'important to be able to find steady work' had the highest error variance (0.898). After its removal overall AVE (0.414) and RRC (0.657) did not improve to acceptable levels. This set of observed variables did not meet the criteria for being suitable for EFA. It was determined that Valued future goals was not a viable latent construct represented by this data and was omitted from the models.

Summary: Self-system variables. A total of six latent constructs and 51 observed variables were examined using the Sloan data in EFAs for the possible use in SEM. Three of

Table 7
Final Factor Loadings: Locus of Control

	Factor1	Uniqueness
not_enough_control	0.5234	0.7261
somebody_stops	0.7095	0.4966
plans_hardly_work	0.739	0.4539
chance_luck_impt	0.4163	0.8267

Table 8
Initial Factor Loadings: Behavioral Regulation

	Factor1	Factor2	Factor3	Factor4	Uniqueness
times_r_late				0.4183	0.7866
times_r_cut				1.0028	0
times_r_trouble			0.9069		0.0912
times_r_in_suspended		0.6455			0.4061
times_r_out_suspended		0.6796			0.2982
transferred_disciplinary	0.6243	0.3759			0.2506
police_pickup	0.8433				0.2329
times_r_arrested	0.9507				0.1332

Note. Blanks represent loadings < |.32|

Table 9
Final Factor Loadings: Behavioral Regulation

	Factor1	Uniqueness
transferred_disciplinary	0.828	0.3143
police_pickup	0.882	0.2222
times_r_arrested	0.934	0.1286

Table 10

Initial Factor Loadings: Valued Future Goals

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Uniqueness
work_success	0.5772								0.6106
marry		0.8281							0.271
money	0.3855								0.7427
friendships			0.6984						0.417
Steady work	0.754								0.4066
help				0.7231					0.4311
opportunity	0.3363	0.3228							0.6744
near					0.9847				0
away							0.7427		0.4419
correct				0.5567					0.6157
children		0.5953							0.6081
leisure						0.5468			0.5379
get_away							0.3868	0.4209	0.5818

Note. Blanks represent loadings < |.32|

Table 11

Final Factor Loadings: Valued Future Goals

	Factor1	Uniqueness
marry_important	0.7967	0.3652
steady_work_important	0.373	0.8609
children_opport_important	0.4979	0.7522
have_children_important	0.5874	0.6549

those latent constructs, Academic effort, Locus of control, and Valued future goals, did not demonstrate the required indices for reliability and validity and were removed from the models. Three of the latent constructs, Expectations of success, Self-esteem, and Behavioral regulation did demonstrate the required indices for reliability and validity. Furthermore, each latent construct emerged from an EFA with 3 observed measurements as support for the three-indicator rule, which helps to enable a congeneric measurement model that is identified (Hair et al., 2009).

Context and Process: The Parent Microsystem

Parent-school involvement. An exploratory factor analysis of the four individual survey items (Table B7, p. 201) representing parent-school involvement of the adolescents in this study was performed. Measures of factorability indicated that the data had mixed issues surrounding factorability (limited variables for exploration with two correlation < |0.30|; overall KMO = 0.715; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |.32|). Initial assessment (Table 12, p. 93) yielded a one-factor solution. This single factor included the four observed variables (attended school meeting, called teacher or counselor, attended school event R was in, volunteered at school), eigenvalue = 1.471, which produced mixed results for measures of reliability and validity (average factor loadings = 0.593; Alpha = 0.670; Omega =0.690; RRC = 0.684; AVE = 0.368; all SMC's < 0.330.). These measures indicated a problem with reliability and convergent validity. The item 'parents called teacher or counselor' had the highest error variance (0.839) and also the lowest SMC value (0.119). After its removal (Table 13, p. 93) (eigenvalue = 1.317) overall AVE (0.439) and RRC (0.691) did not improve to acceptable levels. It was determined that Parent-school involvement was not a viable latent construct represented by this data and was omitted from the models.

Table 12
Initial Factor Loadings: Parent School Involvement

	Factor1	Uniqueness
attend_schl_meeting	0.7274	0.471
called_tchr_counsel	0.4011	0.8391
attend_schl_event	0.5678	0.6776
volunteer_school	0.6776	0.5409

Table 13
Final Factor Loadings: Parent School Involvement

	Factor1	Uniqueness
attend_schl_meeting	0.7052	0.5027
attend_schl_event	0.5825	0.6607
volunteer_school	0.6928	0.52

Table 14
Initial and Final Factor Loading: Parent Communication

	Factor1	Uniqueness
discussed_courses	0.6406	0.5896
discussed_activities	0.7538	0.4318
discussed_studies	0.6754	0.5438

Parent communication. An exploratory factor analysis of the three individual survey items (Table B8, p. 201) representing parent communication for adolescents in this study was performed. Measures of factorability indicated that the data had mixed issues surrounding factorability (limited variables for exploration; correlations > |0.30|; overall KMO = 0.680; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.38|). Initial assessment (Table 14, p. 93) yielded a one-factor solution (eigenvalue = 1.435). This single factor included the three observed variables (discussed school courses with parent, discussed school activities with parent, discuss things studied in class w/parent), eigenvalue = 1.593, which produced mixed results for measures of reliability and validity (average factor loadings = 0.697; Alpha = 0.730; Omega =0.732; RRC = 0.733; AVE = 0.478; SMC's = 0.280, 0.344, 0.305.). These measures indicated a problem with convergent validity. The item 'discussed school courses with parent' had the highest error variance (0.590) and also the lowest SMC value (0.280). The removal of any of the variables would result in a latent construct with only 2 indicator variables. This would jeopardize the models with under-identification. It was determined that Parent communication was not a viable latent construct represented by this data and was omitted from the models.

Parent supervision. An exploratory factor analysis of the 12 individual survey items (Table B9, p. 202) representing the parent supervision of adolescents in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis except for the covariance matrix values (a majority of the correlations between variables < |0.30|; overall KMO = 0.833; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|). Factor analysis was attempted even with this initial finding to see if variables that did have adequate correlations might represent the latent construct Parent

supervision. Initial assessment yielded a seven-factor solution including three factors with eigenvalues > 1 that cumulatively accounted for 73.8% of the total variance. Factor reduction was applied by removing variables with low contributions to variance and/or weak SMC. The goal was to reduce the observed variables to a single factor as a reliable and valid estimate of the construct, Parent supervision. Two variables with single loads were removed. There was a clear split in the pattern matrix between two sets of factors that had different themes of supervision: direct control of activities and passive monitoring of activity choices. For this reason, the two sets of variables were split and two EFA's were performed.

Parent active supervision included a set of seven individual survey items. Measures of factorability indicated that the data were suitable for factor analysis except for the covariance matrix values (a majority of the correlations between variables < |0.30|; overall KMO = 0.756; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|). Factor analysis was attempted even with this initial finding to investigate if variables that did have adequate correlations might represent the latent construct, Parent active supervision. Initial assessment (Table 15, p. 98) yielded a three-factor solution including one factor with an eigenvalue > 1 that cumulatively accounted for 61% of the total variance. Factor reduction was applied by removing variables with low contributions to variance and/or weak SMC. The final solution (Table 16, p. 98) yielded a single factor with three observed variables (parents check whether R has done homework, parents help with homework, parents limit TV watching, videogame time), eigenvalue = 1.237, which produced mixed results for measures of reliability and convergent validity (average factor loadings = 0.617; Alpha = 0.633; Omega =0.661; RRC = 0.660; AVE = 0.412; SMC's = 0.320, 0.303, 0.102.). The removal of any of the variables would result in a latent construct with only two indicator variables. This would jeopardize the models

with under-identification. It was determined that Parent Active Supervision was not a viable latent construct represented by this data and was omitted from the models.

Parent passive supervision included a set of five individual survey items. Measures of factorability indicated that the data were suitable for factor analysis (a majority of the correlations between variables > |0.30|; overall KMO = 0.809; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|). Initial assessment (Table 17, p. 98) yielded a two-factor solution including one factor with an eigenvalue > 1 that cumulatively accounted for 86.3% of the total variance. Factor reduction was applied by removing the variable with a low contribution to variance. The final solution (Table 18, p. 99) yielded a single factor with four observed variables (parents investigate who R's friends are, parents investigate how r spends money, parents investigate R's free time, parents investigate where R is after school), eigenvalue = 1.847, which produced mixed results for measures of reliability and validity (average factor loadings = 0.675; Alpha = 0.791; Omega =0.772; RRC = 0.773; AVE = 0.462; SMC's = 0.284, 0.318, 0.434, 0.314.). These measures indicated a problem with reliability and convergent validity. The item 'parents investigate how r spends money' had the highest error variance (0.632). Its removal did not raise AVE to an acceptable level (0.474). The removal of any additional variables would possibly result in a latent construct with only two indicator variables. This would jeopardize the models with under-identification. It was determined that Parent passive supervision was not a viable latent construct represented by this data and was omitted from the models.

Parent autonomy support. An exploratory factor analysis of the 10 individual survey items (Table B10, p. 203) representing the anticipated future of adolescents in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis

except for the covariance matrix values (slightly less than half of the correlations between variables > |0.30|; overall KMO = 0.836; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|) (Hair et al., 2009; Tabachnick & Fidell, 2007). Initial assessment (Table 19, p. 99) yielded a six factor solution, including two factors with eigenvalues > 1 that cumulatively accounted for 75% of the total variance. Factor reduction was applied by removing variables with low contributions to variance and/or weak SMC. The goal was to reduce the observed variables to a single factor as a reliable and valid estimate of the construct, Parent autonomy support. The final solution (Table 20, p. 99) yielded a single factor with three observed variables (who decides what classes R will take, who decides if R should go out for sport, who decides if R can do other school activity), eigenvalue = 1.649, with adequate measures of reliability and validity (average factor loadings = 0.712; Alpha = 0.735; Omega =0.772; RRC = 0.765; AVE = 0.550). These measures assure construct reliability and discriminant and convergent validity. This factor's face value represents parental behavior that encourages behavioral regulation and pro-social behavior by allowing adolescent autonomy in meaningful decision-making.

Summary: Parent context variables. A total of four latent constructs and 29 observed variables were examined using the Sloan data in EFAs for the possible use in SEM. Three of those latent constructs, Parent school involvement, Parent communication, and a possible multidimensional Parent supervision did not demonstrate the required indices for reliability and validity and were removed from the models. One of the latent constructs, Parent autonomy support, did demonstrate the required indices for reliability and validity. This latent construct emerged from an EFA with 3 observed measurements as support for the three-indicator rule, which helps to enable a congeneric measurement model that is identified.

Table 15

Initial Factor Loadings: Parent Active Supervision

	Factor1	Factor2	Factor3	Uniqueness
check_homework	0.4423			0.5508
help_homework	0.9288			0.1649
privileges			0.636	0.5273
limit_privileges		0.4312		0.6609
assign_chores		0.4031		0.8129
TV_gaming		0.563		0.6512
time_friends		0.6168		0.6503

Note. Blanks represent loadings < |.32|

Table 16

Final Factor Loadings: Parent Active Supervision

	Factor1	Uniqueness
check_homework	0.7937	0.3701
help_homework	0.6817	0.5353
TV_gaming	0.377	0.8579

Table 17

Initial Factor Loadings: Parent Passive Supervision

	Factor 1	Factor 2	Uniqueness
friends	0.3926	0.3267	0.5981
night		0.837	0.2854
spending	0.5799		0.5985
free_time	0.8656		0.276
after_school	0.4368		0.5647

Note. Blanks represent loadings < |.32|

Table 18

Final Factor Loadings: Parent Passive Supervision

	Factor 1	Uniqueness
friends	0.607	0.6315
spending	0.646	0.5826
free_time	0.8059	0.3504
after_school	0.6412	0.5889

Table 19

Initial Factor Loadings: Parent Autonomy Support

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Uniqueness
stay_out					0.657		0.5746
friends		0.5542					0.5633
classes			0.409				0.5842
job			0.5351				0.6443
leave_school							0.7562
spend_money		0.5215					0.5912
dating					0.3767		0.585
sport	0.8124						0.2803
activity	0.8388						0.2515
college				0.9982			0

Note. Blanks represent loadings < |.32|

Table 20

Final Factor Loadings: Parent Autonomy Support

	Factor1	Uniqueness
classes	0.4299	0.8152
sport	0.7876	0.3797
activity	0.9185	0.1563

Context and Process: The School and Peer Microsystems

Academic challenge. An exploratory factor analysis of the four individual survey items (Table B11, p. 203) representing academic challenge of adolescents in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis (most correlations between variables > |0.30|; overall KMO = 0.716; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|). Initial assessment (Table 21, p. 102) yielded a one-factor solution. This single factor included four observed variables (R is challenged to use mind in math, R is challenged to use mind in English, R is challenged to use mind in history, R is challenged to use mind in science), eigenvalue = 1.32, which produced low measures of reliability and validity (average factor loadings = 0.575; Alpha = 0.657; Omega =0.664; RRC = 0.662; AVE = 0.331; all SMC's < 0.214). The item 'R is challenged to use mind in math' had the highest error variance and also the lowest SMC value. After its removal overall AVE did not improve to an acceptable level (0.349) and RRC diminished to an unacceptable 0.618. It was determined that Academic challenge (Table 22, p. 102) was not a viable latent construct represented by this data and was omitted from the models.

School climate. An exploratory factor analysis of the ten individual survey items (Table B12, p. 204) representing school climate in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis except for the covariance matrix values (a majority of the correlations between variables < |0.30|; overall KMO = 0.708; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|). Factor analysis was attempted even with this initial finding to see if variables that did have adequate correlations might represent the latent construct School climate. Initial assessment (Table 23, p. 102) yielded a six-factor solution including three factors with eigenvalues > 1 that cumulatively

accounted for 82.9% of the total variance. The third factor was included because it had a loading close to 1 (0.966) and accounted for 22.2% of the total variance. Factor reduction was applied by removing variables with low contributions to variance and/or weak SMC. The goal was to reduce the observed variables to a single factor as a reliable and valid estimate of the construct, School climate. An interim solution yielded a single factor with four observed variables (students often disrupt class, other students often put R down, R does not feel safe at this school, disruptions impede R's learning, misbehaving students get away with it), eigenvalue = 1.14, which produced low measures of reliability and convergent validity (average factor loadings = 0.527; Alpha = 0.586; Omega =0.608; RRC = 0.613; AVE = 0.285; SMC's = 0.141, 0.097, 0.186, 0.197). The item 'R does not feel safe at this school' had the highest error variance (0.838). After its removal overall AVE (0.325) and RRC (0.591) did not improve to acceptable levels. This set of observed variables fulfilled the possibility that they were not suitable for factor analysis. It was determined that School climate (Table 24, p. 103) was not a viable latent construct represented by this data and was omitted from the models.

Student-teacher relationship. An exploratory factor analysis of the five individual survey items (Table B13, p. 204) representing student-teacher relationships in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis (majority of correlations between variables > |0.30|; overall KMO = 0.794; and inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|). Initial assessment (Table 25, p. 103) yielded a two-factor solution, including one factor with eigenvalue >1 that cumulatively accounted for 89.3% of the total variance. Factor reduction was applied by removing the variable with low contribution to variance and weak SMC. An interim solution yielded a single factor with four observed variables (the teaching is good at school,

Table 21
Initial Factor Loadings: Academic Challenge

	Factor1	Uniqueness
challenged_math	0.5365	0.7121
challenged_English	0.5812	0.6622
challenged_history	0.588	0.6542
challenged_science	0.593	0.6483

Table 22
Final Factor Loadings: Academic Challenge

	Factor1	Uniqueness
challenged_English	0.5559	0.6909
challenged_history	0.6626	0.5609
challenged_science	0.5471	0.7007

Table 23
Initial Factor Loadings: School Climate

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Uniqueness
get_along			0.7125				0.4216
school_spirit					0.479		0.646
strict_rules					0.5045		0.7997
discipline_fair						0.5172	0.6251
students_friendly							0.7513
students_disrupt	0.5379						0.6363
put_r_down		0.9878					0
r_not_feel_safe				0.5139			0.6211
impede_learn	0.4912						0.5912
misbehave	0.6465						0.5508

Note. Blanks represent loadings < |.32|

Table 24
Final Factor Loadings: School Climate

	Factor1	Uniqueness
students_disrupt	0.4955	0.7545
students_put_r_down	0.4021	0.8383
disrutions_impede_learn	0.5907	0.651
misbehave_get_away	0.6199	0.6158

Table 25
Initial Factor Loadings: Student-Teacher Relationship

	Factor1	Factor2	Uniqueness
teaching_good	0.6023		0.5028
teachers_interested	0.9039		0.1839
teachers_praise		0.4783	0.58
teachers_put_r_down		0.3843	0.8476
teachers_listen		0.6645	0.4046

Note. Blanks represent loadings < |.32|

Table 26
Final Factor Loadings: Student-Teacher Relationship

	Factor1	Uniqueness
teaching_good	0.7362	0.4581
teachers_interested	0.8566	0.2663
teachers_listen	0.6319	0.6007

teachers are interested in students, teachers praise hard work, teachers really listen), eigenvalue = 2.054. In the process of testing reliability (RRC) and divergent and convergent validity (AVE and squared correlations) through a single construct CFA, the fit indices revealed mixed results including adequate reliability and validity measures and poor RMSEA (RRC = .805, AVE = .514, $\chi^2(2)$ = 65.662, p > 0.0001, RMSEA = 0.125 (90% CI: 0.100–0.151), pclose = .0001 CFI = .975 and TLI = 0.926). The Lagrange multiplier test pointed to a modification index between variables "the teaching is good at school" and "teachers are interested in students", which made theoretical sense and was put into the model. The inclusion of the covariance caused fit indices to improve but created issues with convergent validity (RRC = 0.763; AVE = 0.482, $\chi^2(1)$ = 0.130, p > .0001 RMSEA = 0.000; CFI = 1.000). With regard to the EFA results, the variable "teachers praise hard work" had the lowest factor loading and the lowest SMC. When it was removed the result was one factor with eigenvalue = 1.675 and adequate measures of reliability and validity and no need for a covariance (average factor loadings = 0.742; Alpha = 0.781; Omega = 0.789; RRC = 0.790; AVE = 0.558; SMC's = 0.419, 0.476, 0.312). The final solution (Table 26, p. 103) included three observed variables (the teaching is good at school, teachers are interested in students, teachers really listen). This factor's face value represented student-teacher interactions that can promote teacher closeness, which, as previously discussed, is associated with measures of academic success (Curby et al., 2009; Hughes & Cavell, 1999) and positivity about the future (Foster, 2008).

Peer-shared values. An exploratory factor analysis of the five individual survey items (Table B14–B15, p. 205) representing peer-shared academic values as reported by adolescents in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis (all correlations between variables > |0.30|; overall KMO = 0.836; and

inspection of anti-image correlation matrix yielded a majority of values on the off diagonal < |0.32|). Initial assessment (Table 27, p. 107) yielded a two-factor solution, including one factor with eigenvalue > 1 that cumulatively accounted for 89.4% of the total variance. Factor reduction was applied by removing the variable with low contribution to variance and weak SMC. The goal was to reduce the observed variables to a single factor as a reliable and valid estimate of the construct, Peer-shared values (academic). A final solution (Table 28, p. 107) yielded a single factor with three observed variables (among friends, regular attendance is important, among friends, how important to study, among friends, how important to get good grades), eigenvalue = 1.80, with adequate measures of reliability and validity (average factor loadings = 0.775; Alpha = 0.819; Omega = 0.818; RRC = 0.819; AVE = 0.601). These measures assure construct reliability and discriminant and convergent validity. This factor's face value represents a measure of peer-shared values among adolescents that reflect the developmental task of successful school behaviors towards pursuit of future goals.

An exploratory factor analysis of the three individual survey items (Table B15, p. 205) representing peer-shared social values as reported by adolescents in this study was performed. Measures of factorability indicated that the data were suitable for factor analysis except for a low overall KMO and one higher end value for anti-image correlations (all correlations between variables > |0.30|; overall KMO = 0.648; and inspection of anti-image correlation matrix yielded only one value on the off diagonal < |0.32|). Factor analysis was attempted even with this initial finding to explore if variables might represent the latent construct Peer-shared values (social). Socially oriented values loaded onto a single factor with three observed variables (among friends, how important to be popular, among friends, how important to have a boy/girlfriend, among friends, how important to party/get wild), eigenvalue = 1.80, and with poor measures of

reliability, internal consistency, and validity (average factor loadings = 0.628; Alpha = 0.658; Omega = 0.664; RRC = 0.663; AVE = 0.400). This set of observed variables had borderline criteria for being suitable for EFA. It was determined that Peer-shared values (social) (Table 29, p. 107) was not a viable latent construct represented by this data and was omitted from the models. Peer shared values included in the models represents levels of academically oriented shared values.

Summary: School and peer context variables. A total of four latent constructs and 28 observed variables were examined using the Sloan data in EFAs for the possible use in SEM. Two of those latent constructs, School climate and Perceived academic challenge, did not demonstrate the required indices for reliability and validity and were removed from the models. The other two latent constructs, Student-teacher relationship and Peer-shared values, did demonstrate the required indices for reliability and validity. These latent constructs each emerged from an EFA with three observed measurements as support for the three-indicator rule, which helps to enable a congeneric measurement model that is identified (Hair et al., 2009).

Study 1 concluded with a set of six reliable and valid theoretical constructs (Expectations of success, Self-esteem, Behavior regulation, Parent autonomy support, Student-teacher relationship, and Peer-shared values) for model building represented by a total of 15 observed variables.

Table 27
Initial Factor Loadings: Peer-Shared Values (Academic)

	Factor1	Factor2	Uniqueness
attendance_important	0.624		0.4273
study_important	0.8592		0.3029
good_grades_important	0.5699		0.4197
finish_hs_impt		0.8367	0.2994
post_hs_educ_important		0.5197	0.488

Note. Blanks represent loadings < |.32|

Table 28
Final Factor Loadings: Peer-Shared Values (Academic)

	Factor1	Uniqueness
attendance_important	0.7709	0.4058
study_important	0.8023	0.3563
good_grades_important	0.7509	0.4361

Table 29
Initial and Final Factor Loadings: Peer-Shared Values (Social)

	Factor1	Uniqueness
popular_important	0.5813	0.6621
boy_girlfriend_important	0.7336	0.4618
party_important	0.5692	0.676

Study 2

The proposed models of this analysis were revised for Study 2, based on Study 1, but continued to represent the multiple contexts of adolescent life. The constructs for use in Study 2 characterized the contexts self (Expectations of success, Self-esteem, and Behavioral regulation), parents (Parent autonomy support), school (Student-teacher relationship), and peers (Peer-shared values). In addition covariates gender, race/culture, social class, and age were added to the models for examination in Study 2. As stated above, Study 1 was crucial to the development of Study 2. As a result of this reduced body of latent constructs from Study 1, the proposed theoretical models for Study 2 have been revised as seen in Figures 6–10 (pp. 113, 119, 124, 128, 139).

Study 2 was designed to test the measurement relationships between indicator variables and their associated construct (CFA) and to test the causal structure of the proposed models theoretically hypothesized to impact Expectations of success among adolescents (SEM).
As noted above, because of the EFA results in Study 1, these are the current revised research hypotheses.

1: Characteristics of the self-system (Self-esteem and Behavioral regulation) directly predict expectations of success.

2: A characteristic of parenting (Parent autonomy support), school (student-teacher relationship), and peers (Peer-shared values) predict self-system constructs, which mediates expectations of success.

3: There is a potential impact of membership in a group that may offer societal advantage or disadvantage on the constructs specified in Hypotheses 1 and 2 as measured through the use of race/culture, socioeconomic status and gender as control variables.

4: Age of cohort (young vs. older) will demonstrate different relationships on the constructs specified in Hypotheses 1 and 2.

Interim Model 1

Interim Model 1 represents the relationship between the self-system latent constructs expectations of success (Exp_succ), self-esteem (Self_esteem), and behavioral regulation (Self_behreg) as well as the possible influences of the macrosystem covariates stated above. Exp_succ is the dependent variable with 3 indicators (chances R will have a job that pays well, chances that R will be able to own home, chances R will have a job s/he enjoys), Self_esteem is an independent variable with 3 indicators (R feels good about self, R feels s/he is a person of worth, on the whole R is satisfied with self) and Self_behreg is a second independent variable with 3 indicators (R transferred for disciplinary reasons, R picked up by police, how many times R was arrested). It was hypothesized that self esteem and behavior regulation will directly predict expectations of success. Correlations stated in Tables C1-C2, p. 206.

CFA. Interim Model 1 (Table 30, p. 111) CFA results included $\chi^2(24) = 85.155$, $p > .0001$, RMSEA = 0.035, (90% CI: 0.027–0.043), pclose = 0.999, CFI = 0.993 and TLI = 0.989. These results indicate good model fit to the data. Standardized measurement coefficients, RRC, and AVE indicate strong reliability and validity for the constructs including convergent and divergent validity (Tables 30, p. 111). All latent factors had an AVE value above the critical level of 0.50 (Hair et al., 2009) signifying no convergent validity issues. As an additional measure, discriminant validity was verified by comparing the AVE to all inter-factor correlations. All factors demonstrated adequate discriminant validity, as the AVE values were greater than the squared correlations. Modification indices signifying improved model fit through correlation of error terms did not offer any necessary parameter change to the chi square

value. The model fit was adequate to proceed to evaluation in a SEM.

SEM. Interim Model 1 (Figure 6, p. 113) SEM demonstrated good fit to the data, $\chi^2(84)$ =256.127, p > 0.0001, RMSEA = 0.030, (90% CI: 0.026–0.034), pclose = 1.0, CFI = 0.980 and TLI = 0.971.

Results for invariance testing are in Table C3, p. 207. Interim Model 1 demonstrated configural invariance but failed invariance testing at Level 2 with non-invariant measurement loadings as seen from a significant likelihood ratio test. Post-hoc inspection found that 2 of the 3 observed indicator variables on the latent construct Self_behreg are not invariant. This latent construct is considered not invariant and was removed from the model. The model was revised, as shown in Figure 7 (p. 113). Hypothesis 1 was also revised: A characteristic of self-system constructs (self-esteem) directly predicts expectations of success.

Re-specified Model 1

CFA. A CFA was conducted on the re-specified Model 1 (Table 31, p. 111). Results included $\chi^2(8)$ = 21.217, p > 0.002, RMSEA = .029 (90% CIs 0.014–0.045), pclose = .988, CFI = .997, and TLI = .994. These results indicate good model fit to the data. Standardized measurement coefficients, RRC, and AVE indicate strong reliability and validity for the constructs including convergent and divergent validity. All latent factors had an AVE value above the critical level of 0.50 (Hair et al., 2009) signifying no convergent validity issues. As an additional measure, discriminant validity was verified by comparing the AVE to all inter-factor correlations. All factors demonstrated adequate discriminant validity, as the AVE values were greater than the squared correlations. Modification indices signifying improved model fit through correlation of error terms did not offer any necessary parameter change to the chi square value. The model fit was adequate to proceed to evaluation in a SEM.

Table 30
Interim Model 1: CFA Results

Latent Construct	Observed variable	Standardized Measurement Coefficient*	RRC	AVE
Expectations of Success	Chances R will have a job that pays well	0.832	.859	.669
	Chances that R will be able to own home	0.871		
	Chances R will have a job s/he enjoys	0.746		
Self Esteem	R feels good about self	0.755	.771	.528
	R feels s/he is a person of worth	0.667		
	On the whole R is satisfied with self	0.755		
Self-regulation	R transferred for disciplinary reasons	0.825	.923	.794
	R picked up by police	0.903		
	How many times R was arrested	0.942		

Note. RRC = Raykov's reliability coefficient. AVE = Average variance extracted
*All standardized measurement coefficients were significant at the $p < 0.0001$ level

Table 31
Model 1: CFA Results

Latent Construct	Observed variable	Standardized Measurement Coefficient*	RRC	AVE
Expectations of Success	Chances R will have a job that pays well	.831	0.859	0.669
	Chances that R will be able to own home	.872		
	Chances R will have a job s/he enjoys	.746		
Self-esteem	R feels good about self	.750	0.771	0.528
	R feels s/he is a person of worth	.667		
	On the whole R is satisfied with self	.760		

Note. RRC = Raykov's reliability coefficient. AVE = average variance extracted
*All standardized measurement coefficients were significant at the $p < 0.0001$ level

Table 32
Model 1: Hypothesis Summary on Expectation of Success

Hypothesis	Unst.	SE	Std. (*p-value*)	95% CI (N) LL	95% CI (N) UL	Hypothesis Supported?
H1. Student Self-esteem directly predicts student Expectation of Success	0.451	0.040	0.342 (.0001)	0.289	0.396	Yes
H3a. Gender has a potential impact on student Expectation of Success						
Female to Expectation of Success	-0.044	0.034	-0.032 (.202)	-0.080	0.017	No
H3b. Race/Culture has a potential impact on student Expectation of Success.						
Asian to Expectation of Success	-0.079	0.076	-0.029 (.297)	-0.083	0.025	No
Hispanic to Expectation of Success	-0.158	0.059	-0.077 (.007)	-0.134	-0.021	Yes
Black to Expectation of Success	-0.034	0.053	-0.018 (.519)	-0.074	0.037	No
Native American to Expectation of Success	-0.414	0.155	-0.069 (.007)	-0.119	-0.018	Yes
H3c. Social class has a potential impact on student Expectation of Success.						
Poor to Expectation of Success	-0.116	0.080	-0.042 (.146)	-0.099	0.015	No
Working class to Expectation of Success	-0.007	0.046	-0.004 (.878)	-0.058	0.049	No
Upper middle class to Expectation of Success	-0.144	0.044	-0.094 (.001)	-0.150	-0.038	Yes
Upper class to Expectation of Success	-0.027	0.076	-0.008 (.719)	-0.053	0.037	No
H4. Age of cohort will have a differential impact on the Expectations of Success.						
Middle school to Expectation of Success	0.064	0.036	0.045 (.0001)	-0.004	0.094	No

Note. Unstd. = unstandardized coefficient. Std = standardized coefficient. SE = standard error; CI = confidence interval. N = Normal-based. LL = Lower limit. UL = Upper limit.

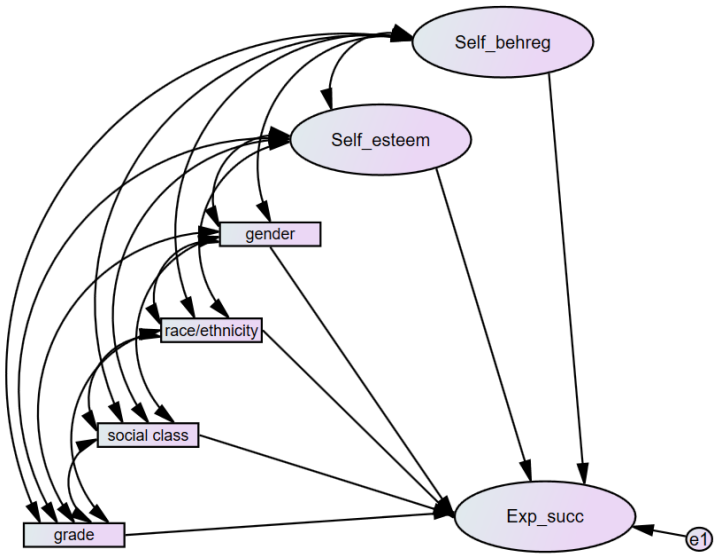

Figure 6. Interim Model 1: The Self-System.

Covariate variables were dummy coded using a reference category.

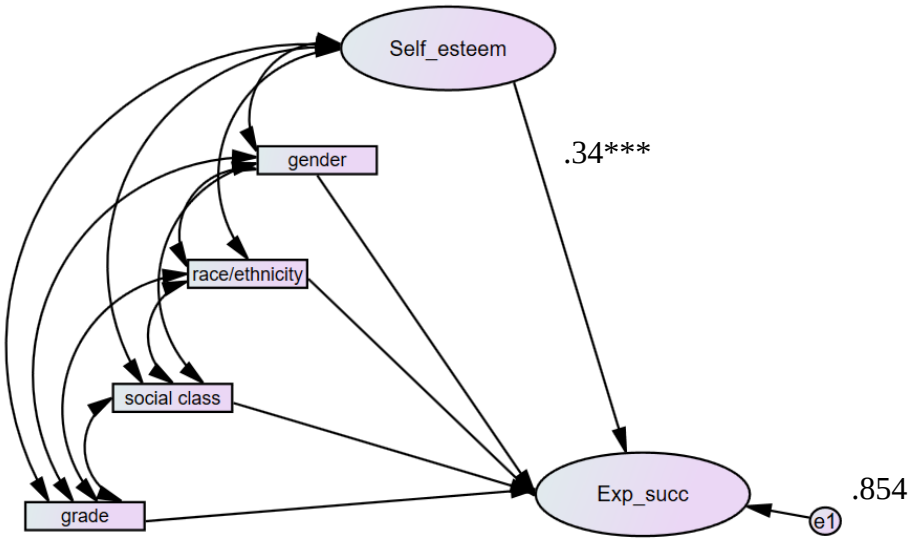

Figure 7. Model 1 Results: The Self-System.

Covariate variables were dummy coded using a reference category.
*p < .05. **p < .01. ***p < .001.

SEM. A SEM using Model 1 (Figure 7, p.113) demonstrated good fit to the data: $\chi^2(48)$ =145.774, p > 0.0001, RMSEA = 0.030 (90% CIs 0.026–0.034), pclose = 1.0, CFI = .976, and TLI = .963. With adequate model fit, the model was tested for invariance through cross validation. Correlations stated in Tables C4-C5, p. 208.

Results for invariance testing are in Table C6, p. 210. The model demonstrated configural, measurement and structural invariance from non-significant likelihood ratio tests at Levels 2 and 3. At Level 4, invariance was not seen for all measurement error terms. Post-hoc inspection found that the three measurement errors for the observed variables on latent construct Self_esteem were not invariant. These parameters were freed one at a time, choosing the one with the largest Lagrange multiplier test value at each turn. After all three were freed the model achieved a non-significant likelihood ratio test for invariance. Inspection of the constrained and freed parameters for each group identified differences in the range of |0.028–0.056|. This difference resulted in a statistically significant likelihood ratio test but represents a small change in error variance between groups. Since the revised Model 1 demonstrated invariance of measurement and structural loadings, the freed parameters were allowed to stay in the model for comparison of structural error variances.

Invariance tests at Level 5 uncovered a structural error variance, Exp_succ that resulted in a significant likelihood ratio test. When that error variance was freed a “net zero” in the degrees of freedom resulted. This made a likelihood ratio test undoable. A comparison of the constrained and freed standardized error terms for Exp_succ for each group showed a difference in the range of |0.042–0.087|. This difference may be statistically significant with the likelihood ratio test but represents a small change in error variance between groups. With the exception of the three error variances for the indicator variables on the latent construct Self_esteem and the

error variance for the latent construct Exp_succ, the hypothesized causal patterns for Self_esteem and Exp_succ were equivalent across two independent samples of students. This concludes cross validation of the causal structure for revised Model 1.

Structural relationships in the model are demonstrated through the inspection of standardized coefficients. Significant relationships are seen between Self esteem, membership in the Hispanic or Native American race, and upper middle class membership and Exp_succ. The model explains 14.6% of the variance in Expectation of success. No further testing is needed since the revised Model 1 does not include a proposed mediation relationship. Hypothesis summary results stated in Table 32, p. 112.

Model 2

CFA. A CFA was conducted on Model 2 (Table 33, p. 116). This model represents the relationship between the self-system latent constructs and Parent Autonomy Support (Parent_autsupp). The results indicate good model fit to the data: $\chi^2(24) = 36.963$, p > 0.000, RMSEA = .016, (90% CI: 0.003–0.026), pclose = 1.0, the CFI = 0.998 and TLI = 0.997. These results indicate a good fit to the data. Standardized measurement coefficients, RRC, and AVE indicate strong reliability and validity for the constructs including convergent and divergent validity. All latent factors had an AVE value above the critical level or 0.50 (Hair et al., 2009) signifying no convergent validity issues. As an additional measure, discriminant validity was verified by comparing the AVE to all inter-factor correlations. All factors demonstrated adequate discriminant validity, as the AVE values were greater than the squared correlations. Modification indices signifying improved model fit through correlation of error terms did not offer any necessary parameter change to the chi square value. The model fit was adequate to proceed to evaluation in a SEM. Correlations stated in Tables C7-C8, pp. 210–211.

Table 33
Model 2: CFA Results

Latent Construct	Observed variable	Standardized Measurement Coefficient*	RRC	AVE
Expectations of Success	Chances R will have a job that pays well	.831	0.858	0.668
	Chances that R will be able to own home	.873		
	Chances R will have a job s/he enjoys	.743		
Self Esteem	R feels good about self	.748	0.771	0.528
	R feels s/he is a person of worth	.668		
	On the whole R is satisfied with self	.760		
Parent Autonomy Support	Who decides what classes R will take	.787	0.764	0.549
	Who decides if R should go out for sport	.917		
	Who decides if R can do other school activity	.433		

*All standardized measurement coefficients were significant at the $p < 0.0001$ level

Table 34
Model 2: Hypothesis Summary on Expectation of Success

Hypothesis	Unst.	SE	Std. (*p-value*)	95% CI (N) LL	95% CI (N) UL	Hypothesis Supported?
H1. Student Self-esteem directly predicts student Expectation of Success	0.437	0.040	0.333 (.0001)	0.280	0.387	Yes
H3a. Gender has a potential impact on student Expectation of Success						
Female to Expectation of Success	-0.048	0.034	-0.035 (.157)	-0.084	0.014	No
H3b. Race/Culture has a potential impact on student Expectation of Success.						
Asian to Expectation of Success	-0.049	0.076	-0.018 (.519)	-0.072	0.036	No
Hispanic to Expectation of Success	-0.156	0.059	-0.077 (.008)	-0.133	-0.020	Yes
Black to Expectation of Success	-0.029	0.052	-0.016 (.581)	-0.071	0.040	No
Native American to Expectation of Success	-0.247	0.158	-0.041 (.116)	-0.091	0.010	No
H3c. Social class has a potential impact on student Expectation of Success.						
Poor to Expectation of Success	-0.116	0.079	-0.043 (.142)	-0.100	0.014	No
Working class to Expectation of Success	-0.006	0.045	-0.004 (.889)	-0.057	0.050	No
Upper middle class to Expectation of Success	-0.157	0.043	-0.104 (.0001)	-0.159	-0.048	Yes
Upper class to Expectation of Success	-0.040	0.076	-0.012 (.598)	-0.057	0.033	No
H4. Age of cohort will have a differential impact on the Expectations of Success.						
Middle school to Expectation of Success	0.100	0.037	0.070 (.007)	0.019	0.122	Yes

Note. Unstd. = unstandardized coefficient. Std = standardized coefficient. SE = standard error; CI = confidence interval. N = Normal-based. LL = Lower limit. UL = Upper limit.

Table 35
Model 2: Hypothesis Summary on Self Esteem

Hypothesis	Unst.	SE	Std. (*p-value*)	95% CI (N) LL	95% CI (N) UL	Hypothesis Supported?
H2a. Parent Autonomy Support directly predicts student Self-esteem.	0.065	0.027	0.097 (.001)	0.038	0.157	Yes
H3a. Gender has a potential impact on student Self-esteem						
Female to Self Esteem	-0.115	0.061	-0.110 (.000)	-0.161	-0.059	Yes
H3b. Race/Culture has a potential impact on student Self Esteem						
Asian to Self Esteem	-0.074	0.048	-0.035 (.225)	-0.093	0.022	No
Hispanic to Self Esteem	-0.006	0.043	-0.004 (.900)	-0.065	0.057	No
Black to Self Esteem	0.174	0.127	0.124 (.000)	0.065	0.183	Yes
Native American to Self Esteem	0.040	0.062	0.009 (.754)	-0.045	0.062	No
H3c. Social class has a potential impact on student Self Esteem.						
Poor to Self Esteem	0.037	0.037	0.018 (.557)	-0.041	0.077	No
Working class to Self Esteem	-0.024	0.035	-0.019 (.511)	-0.077	0.038	No
Upper middle class to Self Esteem	-0.021	0.063	-0.018 (.550)	-0.078	0.042	No
Upper class to Self Esteem	0.057	0.030	0.023 (.368)	-0.027	0.072	No
H4. Age of cohort will have a differential impact on Self Esteem.						
Middle school to Expectation of Success	0.060	0.020	0.055 (.048)	0.000	0.110	Yes

Note. Unstd. = unstandardized coefficient. Std = standardized coefficient. SE = standard error; CI = confidence interval. N = Normal-based. LL = Lower limit. UL = Upper limit.

Table 36
Model 2: Hypothesis Summary on Mediation

Hypothesis			95% CI (BS) LL	95% CI (BS) UL	Hypothesis Supported?
H2a. Parent Autonomy Support predicts student Self-Esteem, which mediates student Expectation of Success.	Direct (SE)	0.079 (0.029)	*0.025*	*0.143*	Yes. Complementary Mediation
	Indirect (SE)	0.028 (0.010)	*0.008*	*0.048*	

Note. SE = standard error; CI = confidence interval. BS = Bias-corrected Bootstrap.

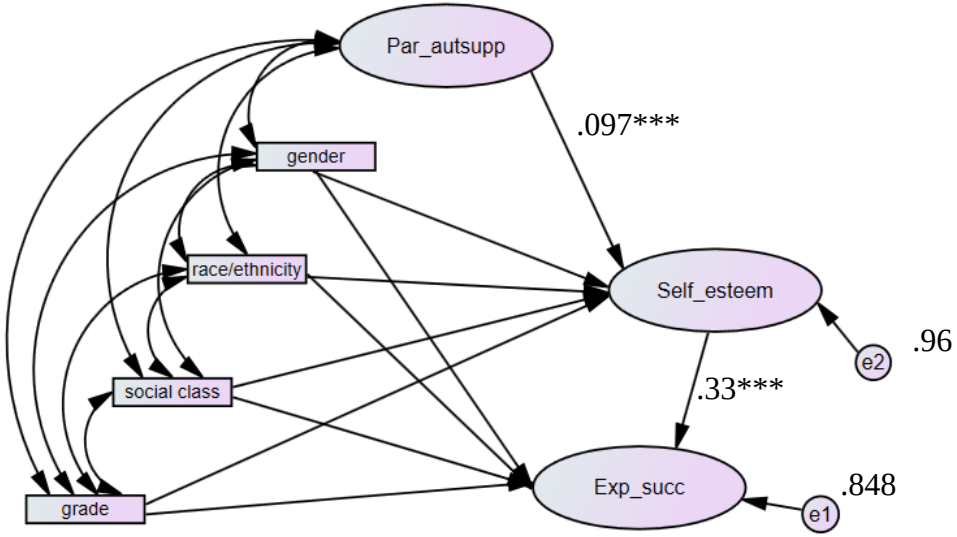

Figure 8. Model 2 Results: The Self and Parent Systems**.**

Covariate variables were dummy coded using a reference category.
*p < .05. **p < .01. ***p < .001.

SEM. A SEM using Model 2 (Figure 8, p.119) demonstrated good fit to the data, $\chi^2(84)$ = 312.936, p > 0.0001, RMSEA = 0.035 (90% CI: 0.031–0.039), pclose = 1.0, CFI = .964 and TLI = 0.946. With adequate model fit, the model was tested for invariance through cross validation.

Results for invariance testing are in Table C9, p. 213. Model 2 demonstrated configural, measurement, and structural invariance from non-significant likelihood ratio tests at Levels 2 and 3. At Level 4, invariance was not seen for all measurement error terms. Inspection found that the three measurement errors for the observed variables on latent construct Self_esteem and the one measurement error for Exp_succ were not invariant. These parameters were freed one at a time, choosing the one with the largest Lagrange multiplier test value at each turn. After all four were freed the model achieved a non-significant likelihood ratio test for invariance. Inspection of the constrained and freed parameters for each group identified differences in the range of |0.028–0.056|. This difference may be statistically significant with the likelihood ratio test but represents a small change in error variance between groups.

Since Model 2 demonstrated invariance of measurement and structural loadings, the freed measurement error parameters were allowed to stay in the model for comparison of structural error variances. Level 5 structural invariance testing uncovered two structural error variances, for Exp_succ and Self_esteem, which resulted in a significant likelihood ratio test. When the error variance for the greater Lagrange multiplier value, Exp_succ, was freed a significant likelihood ratio test resulted. Inspection showed the error variance for the latent construct Self_esteem continued to have a significant Lagrange multiplier value. Unfortunately, when that error variance was freed a chi-square difference test was unobtainable as the chi-square and degrees of freedom were equal to that of the model at Level 4. A comparison of the constrained

and freed standardized error terms for Exp_succ for each group showed a difference in the range of |0.044-0.090| and, for Self_esteem, group differences were in the range of |0.013–0.031|.

With the exception of the three error variances for the indicator variables on the latent construct Self_esteem and the error variances for the latent constructs Exp_succ and Self_esteem, the hypothesized causal patterns for self-esteem, parent autonomy support and adolescent expectation of success were equivalent across two independent samples of students.

Structural relationships in the model are demonstrated through the inspection of standardized coefficients. Significant relationships are seen between Self_esteem, membership in the Hispanic race, upper middle class membership, and grade_age in middle school and Exp_succ. Significant relationships are seen between females, membership as Black, and grade_age in middle school and Self_esteem. The model explains 15.2% of the variance in Exp_succ and 4% of the variance of Self_esteem.

Mediation analysis was done using 1000 bias corrected bootstrapped samples (Table 36, p. 119). Direct and indirect paths were significant between the variables Par_autsupp, Self-esteem, and Exp_succ indicating complementary mediation utilizing a typology of mediation by Zhao, et al (2010). Hypothesis summary results stated in Tables 34–36, p. 118–119.

Model 3

CFA. A CFA was conducted on Model 3 (Table 37, p. 124), representing the relationship between the self-system latent constructs and Student-Teacher Relationship (Schl_sttchr). $\chi^2(24)$ = 54.910, p > 0.000, RMSEA = .025, (90% CI: 0.016–0.034), pclose = 1.0, the CFI = 0.995 and TLI = 0.992. These results indicate good model fit to the data. Standardized measurement coefficients, RRC, and AVE indicate strong reliability and validity for the constructs including convergent and divergent validity. All latent factors had an AVE

value above the critical level or 0.50 (Hair et al., 2009) signifying no convergent validity issues. As an additional measure, discriminant validity was verified by comparing the AVE to all inter-factor correlations. All factors demonstrated adequate discriminant validity, as the AVE values were greater than the squared correlations. Modification indices signifying improved model fit through correlation of error terms did not offer any necessary parameter change to the chi square value. The model fit was adequate to proceed to evaluation in a SEM.

SEM. A SEM using Model 3 (Figure 9, p. 124), demonstrated good fit to the data, $\chi^2(84) = 205.865$, p > 0.0001, RMSEA = .025 (90% CI: 0.021–0.031), pclose = 1.0, CFI = 0.980 and TLI = 0.970. With adequate model fit, the model was tested for invariance through cross validation. Correlations stated in Tables C10-C11, p. 213–214.

Results for invariance testing are in Table C12, p. 216. Model 3 demonstrated configural, measurement, and structural invariance from non-significant likelihood ratio tests at levels 2 and 3. At Level 4, invariance was not seen for all measurement error terms. Inspection found a total of five measurement error variances for the observed variables on latent constructs Self_esteem and Schl_sttchr to be not invariant. These parameters were freed one at a time, choosing the one with the largest Lagrange multiplier test value at each turn. After all five were freed the model achieved a non-significant likelihood ratio test for invariance at Level 4.

Inspection of the constrained and freed parameters for each group identified differences in the range of |0.028–0.066| for two measurement errors on Schl_sttchr, and |0.026–0.056| for three measurement error variances on Self_esteem. Since Model 3 demonstrated invariance of measurement and structural loadings, the freed parameters were allowed to stay in the model for comparison of structural error variances. Level 5 invariance uncovered two structural error variances, for Exp_succ and Self_esteem, that resulted in a significant likelihood ratio test.

When the error variance for the greater Lagrange multiplier value, Exp_succ, was freed a significant likelihood ratio test resulted. Inspection showed the error variance for the latent construct Self_esteem continued to have a significant Lagrange multiplier value. Unfortunately, when that error variance was freed a chi-square difference test was unobtainable as the chi-square and degrees of freedom were equal to that of the model at Level 4. A comparison of the constrained and freed standardized error terms for Exp_succ for each group showed a difference in the range of |0.047–0.099| and, for Self_esteem, group differences were in the range of |0.016–0.038|. This difference may cause a statistically significant likelihood ratio test but represents a small change in error variance between groups.

With the exception of the five measurement error variances for the indicator variables for the constructs Self_esteem and Schl_sttchr and the error variances for the latent construct Exp_succ and Self_esteem, the hypothesized causal patterns for self-esteem, parent autonomy support and adolescent expectation of success were equivalent across two independent samples of students. This concludes cross validation of the causal structure for Model 3.

Structural relationships in the model are demonstrated through the inspection of standardized coefficients (Table 38–39, pp. 125–126). Significant relationships are seen between Self_esteem, Schl_sttchr, female, membership in the Asian, Hispanic, or Native American race, and upper middle class membership and Exp_succ. Significant relationships are seen between Schl_sttchr, females, and membership as Asian or Black and Self_esteem. The model explains 15.1% of the variance in Exp_succ and 12.6% of the variance of Self_esteem.

Mediation analysis was done using 1000 bias corrected bootstrapped samples (Table 40, p. 126). Direct and indirect paths were significant between the variables Par_autsupp, Self-esteem, and Exp_succ indicating complementary mediation (Zhao et al., 2010)

Table 37
Model 3: CFA Results

Latent Construct	Observed variable	Standardized Measurement Coefficient*	RRC	AVE
Expectations of Success	Chances R will have a job that pays well	0.830	0.858	0.668
	Chances that R will be able to own home	0.869		
	Chances R will have a job s/he enjoys	0.766		
Self Esteem	R feels good about self	0.745	0.770	0.527
	R feels s/he is a person of worth	0.669		
	On the whole R is satisfied with self	0.761		
Student Teacher Relationship	The teaching is good at school	0.741	0.790	0.558
	Teachers are interested in students	0848		
	Teachers really listen	0.637		

*All standardized measurement coefficients were significant at the $p < 0.0001$ level

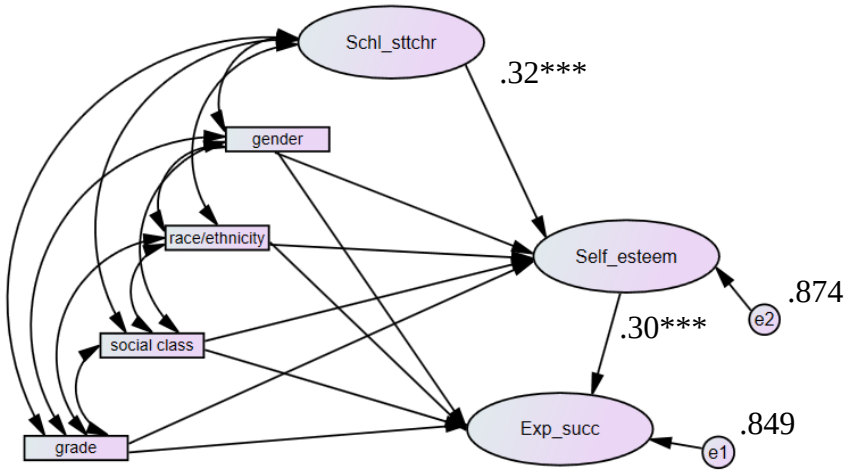

Figure 9. Model 3 Results: The Self and School Systems.

Covariate variables were dummy coded using a reference category.
*p < .05. **p < .01. ***p < .001.

Table 38
Model 3: Hypothesis Summary on Expectation of Success

Hypothesis	Unst.	SE	Std. (*p-value*)	95% CI (N) LL	95% CI (N) UL	Hypothesis Supported?
H1. Student Self-Esteem directly predicts student Expectation of Success	0.401	0.043	0.302 (.000)	0.243	0.361	Yes
H3a. Gender has a potential impact on student Expectation of Success						
Female to Expectation of Success	-0.045	0.034	-0.033 (.189)	-0.081	0.016	No
H3b. Race/Culture has a potential impact on student Expectation of Success.						
Asian to Expectation of Success	-0.103	0.076	-0.038 (.175)	-0.092	0.017	No
Hispanic to Expectation of Success	-0.159	0.059	-0.078 (.007)	-0.134	-0.021	Yes
Black to Expectation of Success	-0.012	0.053	-0.007 (.817)	-0.063	0.050	No
Native American to Expectation of Success	-0.386	0.154	-0.064 (.012)	-0.115	-0.014	Yes
H3c. Social class has a potential impact on student Expectation of Success.						
Poor to Expectation of Success	-0.127	0.080	-0.046 (.114)	-0.103	0.011	No
Working class to Expectation of Success	-0.006	0.046	-0.004 (.897)	-0.057	0.050	No
Upper middle class to Expectation of Success	-0.152	0.044	-0.100 (.001)	-0.156	-0.043	Yes
Upper class to Expectation of Success	-0.067	0.077	-0.020 (.383)	-0.066	0.025	No
H4. Age of cohort will have a differential impact on the Expectations of Success.						
Middle school to Expectation of Success	0.048	0.036	0.034 (.187)	-0.016	0.083	No

Note. Unstd. = unstandardized coefficient. Std = standardized coefficient. SE = standard error; CI = confidence interval. N = Normal-based. LL = Lower limit. UL = Upper limit.

Table 39
Model 3: Hypothesis Summary on Self Esteem

Hypothesis	Unst.	SE	Std.(*p-value*)	95% CI (N) LL	95% CI (N) UL	Hypothesis Supported?
H2. Student Teacher Relationship directly predicts student Self Esteem	0.307	0.030	0.316 (.000)	0.260	0.373	Yes
H3a. Gender has a potential impact on student Self Esteem						
Female to Self Esteem	-0.106	0.027	-0.102 (.000)	-0.152	-0.052	Yes
H3b. Race/Culture has a potential impact on student Self Esteem						
Asian to Self Esteem	-0.125	0.059	-0.061 (.033)	-0.117	-0.005	Yes
Hispanic to Self Esteem	0.003	0.047	0.002 (.957)	-0.058	0.061	No
Black to Self Esteem	0.211	0.042	0.151 (.000)	0.094	0.209	Yes
Native American to Self Esteem	0.076	0.120	0.017 (.527)	-0.035	0.069	No
H3c. Social class has a potential impact on student Self Esteem.						
Poor to Self Esteem	-0.024	0.061	-0.012 (.694)	-0.070	0.046	No
Working class to Self Esteem	-0.027	0.036	-0.021 (.459)	-0.078	0.035	No
Upper middle class to Self Esteem	-0.059	0.035	-0.051 (.089)	-0.110	0.008	No
Upper class to Self Esteem	-0.023	0.061	-0.009 (.707)	-0.058	0.039	No
Middle school to Self Esteem	-0.012	0.029	-0.011 (.679)	-0.063	0.041	No

Note. Unstd. = unstandardized coefficient. Std = standardized coefficient. SE = standard error; CI = confidence interval. N = Normal-based. LL = Lower limit. UL = Upper limit.

Table 40
Model 3: Hypothesis Summary on Mediation

Hypothesis			95% CI (BS) LL	95% CI (BS) UL	Hypothesis Supported?
H2b. Student Teacher Relationship predicts student Self-Esteem, which mediates student Expectation of Success.	Direct (SE)	0.142 (0.044)	*0.058*	*0.238*	Yes. Complementary Mediation
	Indirect (SE)	0.123 (0.021)	*0.088*	*0.171*	

Note. SE = standard error; CI = confidence interval. BS = Bias-corrected Bootstrap.

Model 4

CFA. A CFA was conducted on Model 4 (Table 41, p. 130), which represents the relationship between the self-system latent constructs and Peer-shared values (Peers_values), $\chi^2(24)$ = 60.404, p > 0.000, the RMSEA was .028, (90% CI: 0.019–0.037), pclose = 1.0, the CFI was 0.994 and TLI was 0.991. These results indicate good model fit to the data. Standardized measurement coefficients, RRC, and AVE indicated strong reliability and validity for the constructs including convergent and divergent validity. All latent factors had an AVE value above the critical level or 0.50 (Hair et al., 2009) signifying no convergent validity issues. As an additional measure, discriminant validity was verified by comparing the AVE to all inter-factor correlations. All factors demonstrated adequate discriminant validity, as the AVE values were greater than the squared correlations. Modification indices signifying improved model fit through correlation of error terms did not offer any necessary parameter change to the chi-square value. The model fit was adequate to proceed to evaluation in a SEM. Correlations stated in Tables C13-C14, p. 217.

SEM. A SEM using Model 4 (Figure 4, p.130), demonstrated good fit to the data, $\chi^2(84)$ = 239.772, p > 0.000, RMSEA = 0.029 (90% CI: .024–.033), pclose = 1.0, CFI = .975 and TLI = 0.963. With adequate model fit, the model was tested for invariance through cross validation. Results for invariance testing are in Table C15, p. 219. Model 4 demonstrated configural, measurement, and structural invariance from non-significant likelihood ratio tests at levels 2 and 3. At Level 4, invariance was not seen for all measurement error terms. Inspection found a total of four measurement error variances for the observed variables on latent constructs Self_esteem and Peers_values to be not invariant. These parameters were freed one at a time, choosing the one with the largest Lagrange multiplier test value at each turn. After all four were

freed the model achieved a non-significant likelihood ratio test for invariance at Level 4.

Inspection of the constrained and freed parameters for each group identified differences in the range of |0.020–0.059| for the three measurement error variances on Self_esteem and |0.014–0.029| for the one measurement error variance on Peers_values. The freed parameters were allowed to stay in the model for comparison of structural error variances. Level 5 invariance uncovered two structural error variances, for Exp_succ and Self_esteem, that resulted in a significant likelihood ratio test. When the error variance for Exp_succ was freed a non-significant likelihood ratio test resulted. Inspection showed that the error variance for the latent construct Self_esteem had a significant effect. Unfortunately, when that error variance was freed a chi-square difference test was unobtainable as the chi-square degrees of freedom were equal to that of the model at Level 4. In a comparison of the constrained and freed structural error variances for Exp_succ for each group, the difference was in the range of |0.089–0.121| and for the error variances for Self_esteem the difference was in the range of |0.037-0.239|. These differences may cause a statistically significant likelihood ratio test but represent a small change in error variance between groups.

With the exception of the four measurement error variances for the indicator variables for the constructs Self_esteem and Peers_values and the error variances for the latent constructs Exp_succ and Self_esteem, the hypothesized causal patterns for self-esteem, peer shared values and adolescent expectation of success were equivalent across two independent samples of students. This concludes cross validation of the causal structure for Model 4.

Structural relationships in the model are demonstrated through the inspection of standardized coefficients. Significant relationships are seen between Self_esteem, Peers_values, females, membership in the Hispanic, or Native American race, and upper middle class

membership and Exp_succ. Significant relationships are seen between Peers_values, females, and membership as Asian or Black and Self_esteem. The model explains 18.3% of the variance of Exp_succ and 10.7% of the variance of Self_esteem.

Mediation analysis was done using 1000 bias corrected bootstrapped samples. Direct and indirect paths were significant between the variables Peers_values, Self_esteem, and Exp_succ indicating complementary mediation utilizing a typology of mediation by Zhao, et al. (2010). Hypothesis summary results stated in Tables 42–44, p. 131–132.

Model 5

CFA. A CFA was conducted on Model 5 (Table 45, p. 136), which represents the relationship between the self-system latent constructs and the social constructs of the parent, school, and peer microsystems, $\chi^2(80) = 173.798$, p > 0.0001, RMSEA = .024, (90% CI: 0.019–0.024), pclose = 1.0, CFI = 0.990 and TLI = 0.987. These results indicate good model fit to the data. Standardized measurement coefficients, RRC, and AVE indicate strong reliability and validity for the constructs including convergent and divergent validity. All latent factors had an AVE value above the critical level of 0.50 (Hair et al., 2009) signifying no convergent validity issues. As an additional measure, discriminant validity was verified by comparing the AVE to all inter-factor correlations. All factors demonstrated adequate discriminant validity, as the AVE values were greater than the squared correlations. Modification indices signifying improved model fit through correlation of error terms did not offer any necessary parameter change to the chi-square value. The model fit was adequate to proceed to evaluation in a SEM. Correlations are stated in Tables C16–C17, p. 220–221.

Table 41
Model 4: CFA Results

Latent Construct	Observed variable	Standardized Measurement Coefficient*	RRC	AVE
Expectations of Success	Chances R will have a job that pays well	.830	0.857	0.666
	Chances that R will be able to own home	.869		
	Chances R will have a job s/he enjoys	.744		
Self Esteem	R feels good about self	.752	0.770	0.527
	R feels s/he is a person of worth	.669		
	On the whole R is satisfied with self	.754		
Peer Shared Values	Among friends, regular attendance important	.771	0.817	0.597
	Among friends, how important to study	.795		
	Among friends, how important get good grades	.753		

*All standardized measurement coefficients were significant at the $p < 0.000$ level

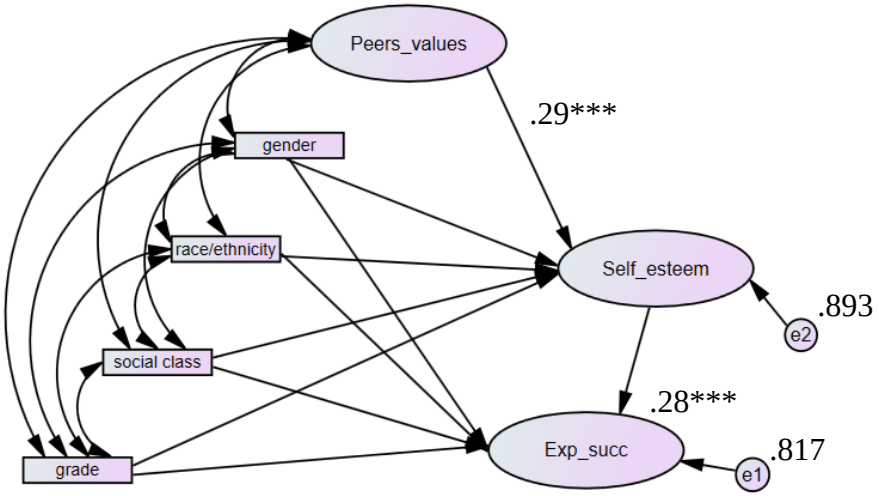

Figure 10. Model 4 Results: The Self and Peer Systems.

Covariate variables were dummy coded using a reference category.
*p < .05. **p < .01. ***p < .001.

Table 42
Model 4: Hypothesis Summary on Expectation of Success

Hypothesis	Unst.	SE	Std. (*p-value*)	95% CI (N) LL	95% CI (N) UL	Hypothesis Supported?
H1. Student Self-Esteem directly predicts student Expectation of Success	0.377	0.041	0.287 (.000)	0.230	0.344	Yes
H3a. Gender has a potential impact on student Expectation of Success						
Female to Expectation of Success	-0.087	0.034	-0.063 (.011)	-0.112	-0.015	Yes
H3b. Race/Culture has a potential impact on student Expectation of Success.						
Asian to Expectation of Success	-0.120	0.076	-0.044 (.114)	-0.098	0.011	No
Hispanic to Expectation of Success	-0.177	0.058	-0.087 (.002)	-0.143	-0.032	No
Black to Expectation of Success	-0.054	0.052	-0.029 (.294)	-0.084	0.025	No
Native American to Expectation of Success	-0.430	0.152	-0.072 (.004)	-0.121	-0.022	Yes
H3c. Social class has a potential impact on student Expectation of Success.						
Poor to Expectation of Success			-0.042 (.147)			
Working class to Expectation of Success	-0.113	0.078	-0.002 (.947)	-0.098	0.015	No
Upper middle class to Expectation of Success	-0.003	0.045	-0.083 (.003)	-0.055	0.051	No
Upper class to Expectation of Success	-0.126	0.043	-0.012 (.613)	-0.138	-0.028	Yes
H4. Age of cohort will have a differential impact on the Expectations of Success.						
Middle school to Expectation of Success	0.022	0.036	0.015 (.547)	-0.034	0.065	No

Note. Unstd. = unstandardized coefficient. Std = standardized coefficient. SE = standard error; CI = confidence interval. N = Normal-based. LL = Lower limit. UL = Upper limit.

Table 43
Model 4: Hypothesis Summary on Self Esteem

Hypothesis	Unst.	SE	Std. (*p-value*)	95% CI (N) LL	95% CI (N) UL	Hypothesis Supported?
H2. Peer-Shared Values directly predicts student Self Esteem	0.316	0.035	0.285 (.000)	0.227	0.342	Yes
H3a. Gender has a potential impact on student Self Esteem						
Female to Self Esteem	-0.146	0.027	-0.140 (.000)	-0.191	-0.090	Yes
H3b. Race/Culture has a potential impact on student Self Esteem						
Asian to Self Esteem	-0.145	0.061	-0.069 (.017)	-0.126	-0.013	Yes
Hispanic to Self Esteem	-0.017	0.047	-0.011 (.712)	-0.071	0.048	No
Black to Self Esteem	0.141	0.042	0.101 (.001)	0.043	0.158	Yes
Native American to Self Esteem	-0.019	0.121	-0.004 (.878)	-0.056	0.048	No
H3c. Social class has a potential impact on student Self Esteem.						
Poor to Self Esteem	0.030	0.061	0.015 (.620)	-0.043	0.072	No
Working class to Self Esteem	-0.015	0.036	-0.012 (.682)	-0.068	0.045	No
Upper middle class to Self Esteem	0.007	0.035	0.006 (.852)	-0.054	0.065	No
Upper class to Self Esteem	0.058	0.062	0.023 (.345)	-0.025	0.072	No
Middle school to Self Esteem	-0.015	0.029	-0.013 (.617)	-0.066	0.039	No

Note. Unstd. = unstandardized coefficient. Std = standardized coefficient. SE = standard error; CI = confidence interval. N = Normal-based. LL = Lower limit. UL = Upper limit.

Table 44
Model 4: Hypothesis Summary on Mediation

			95% CI (BS) LL	95% CI (BS) UL	
H2c. Peer Shared Values predicts student Self-Esteem, which mediates student Expectation of Success.	Direct (SE)	0.296 (0.049)	*0.205*	*0.395*	Yes. Complementary Mediation
	Indirect (SE)	0.119 (0.020)	*0.086*	*0.161*	

Note. SE = standard error; CI = confidence interval. BS = Bias-corrected Bootstrap.

SEM. A SEM using Model 5 (Figure 11, p.139) demonstrated good fit to the data, $\chi^2(180)$ = 523.700, p > 0.0001, RMSEA = 0.029 (90% CI: 0.026–0.032), pclose = 1.0, CFI = .967 and TLI = 0.953. The model was tested for invariance through cross validation.

The data set (*N* = 2297) used for previous CFA, SEM, and bootstrapping did not converge during bootstrapping for the more complex Model 5. It was unable to go past 177 iterations for convergence. After discussion with a statistical consultant, Jeff Meyers, from Statistically Speaking (11-28-18, personal communication), it was determined that bootstrapping may be affected by the sparse nature of some of the respondent's data. Mr. Meyers suggested that respondents missing 50% or more data were possibly making convergence difficult for the more complex model. Missing data profiles, as discussed previously, were examined. Those profiles found 720 respondents missing 50% or more data and they were removed solely for bootstrapping results for Model 5. The resulting data set had 3208 respondents. The calibration group (*N* = 1,925) and the validation group (*N* = 1,283) were separated again from the new full data set (N = 3208) in consideration of a 60%–40% split, respectively.

Results for invariance testing are in Table C18, p. 224. Model 5 demonstrated configural, measurement and structural invariance from non-significant likelihood ratio tests at Levels 2 and 3. At Level 4, invariance was not seen for all measurement error terms. Inspection found a total of six measurement error variances for the observed variables on latent constructs Self_esteem, Schl_sttchr, and Peers_values to be invariant. These parameters were freed one at a time, choosing the one with the largest Lagrange multiplier test value at each turn. After all six were freed the model achieved a non-significant likelihood ratio test for invariance at Level 4.

Inspection of the constrained and freed parameters for each group identified differences in the range of |0.023–0.055| for the three measurement error variances on Self_esteem, |0.030–

0.067| for the two measurement error variances on Schl_sttchr, and |0.013–0.027| for the one measurement error variance on Peers_values. The freed parameters were allowed to stay in the model for comparison of structural error variances. Level 5 invariance testing uncovered two structural error variances, for Exp_succ and Self_esteem, which resulted in a significant likelihood ratio test. When the error variance for Exp_succ was freed a significant likelihood ratio test resulted. Inspection showed that the error variance for the latent construct Self_esteem had a significant effect. Unfortunately, when that error variance was freed a chi-square difference test was unobtainable as the chi-square and degrees of freedom were equal to that of the model at Level 4. In a comparison of the constrained and freed structural error variances for Exp_succ for each group, the difference was in the range of |0.047–0.099|. This difference may cause a statistically significant likelihood ratio test but represents a small change in error variance between groups.

With the exception of the six measurement error variances for the indicator variables for the constructs Self_esteem, Schl_sttchr, and Peers_values and the error variances for the latent constructs Exp_succ and Self_esteem, the hypothesized structural relationships for self-esteem, peer shared values and adolescent expectation of success were equivalent across two independent samples of students.

Structural relationships in the model are demonstrated through the inspection of standardized coefficients. Significant relationships are seen between Self_esteem, Parent Autonomy Support, Schl_sttchr, Peers_values, females, membership in the Hispanic race, and upper middle class membership and Exp_succ. Significant relationships are seen between Self_esteem, Par_autsupp, Schl_sttchr, and Peers_values, females, and membership as Asian or Black and Self_esteem. The model explains 18.3% of the variance in Exp_succ and 17.5% of

the variance of Self_esteem. Hypothesis summary results stated in Tables 46–47, p. 137–138.

Mediation analysis was done using 1000 bias corrected bootstrapped samples (see Table 48, p. 139). The indirect path between the variables Schl_sttch and Exp_succ and between the variables Schl_sttchr and Exp_succ exhibited indirect-only mediation through Self_esteem utilizing the typology of mediation by Zhao. The indirect path between the constructs Peers_values and Exp_succ indicated complementary mediation through Self-esteem.

Summary. Study 1 resulted in a finite number of reliable and valid constructs, which caused a revision of the original hypothesized models. Study 2 uncovered one construct, behavior regulation, with non-invariant measurement loadings. These occurrences resulted in a revision of all five original models that were presented in Chapter 1 (Figures 1–5, pp. 21–23). The interim and revised models are presented in Chapter 3 (Figures 6–10, p. 113, 119, 124, 130, 139). Study 2 established a set of five CFA and SEM models with adequate fit to the data, and with reliable and valid constructs. The five SEM models demonstrated configural invariance and were shown to be invariant for measurement and structural loadings, which is a stringent level of invariance across independent samples (Acock, 2013; Byrne, 1994, 2006). This enabled structural relationships to be explored for all five models.

Table 45
Model 5: CFA Results

Latent Construct	Observed variable	Standardized Measurement Coefficient*	RRC	AVE
Expectations of Success	Chances R will have a job that pays well	0.830	0.855	0.663
	Chances that R will be able to own home	0.866		
	Chances R will have a job s/he enjoys	0.742		
Self Esteem	R feels good about self	0.744	0.769	0.525
	R feels s/he is a person of worth	0.672		
	On the whole R is satisfied with self	0.756		
Parent Autonomy Support	Who decides what classes R will take	0.810	0.762	0.546
	Who decides if R should go out for sport	0.895		
	Who decides if R can do other school activity	0.426		
Student Teacher Relationship	The teaching is good at school	0.752	0.789	0.557
	Teachers are interested in students	0.840		
	Teachers really listen	0.641		
Peer Shared Values	Among friends, regular attendance important	0.768	0.816	0.597
	Among friends, how important to study	0.798		
	Among friends, how important get good grades	0.751		

*All standardized measurement coefficients were significant at the $p < 0.000$ level

Table 46
Model 5: Hypothesis Summary on Expectation of Success

Hypothesis	Unst.	SE	Std. (*p-value*)	95% CI (N) LL	95% CI (N) UL	Hypothesis Supported?
H1. Student Self-Esteem directly predicts student Expectation of Success	0.342	0.043	0.260 (.000)	0.199	0.320	Yes
H3a. Gender has a potential impact on student Expectation of Success						
Female to Expectation of Success	-0.088	0.034	-0.065 (.010)	-0.114	-0.016	Yes
H3b. Race/Culture has a potential impact on student Expectation of Success.						
Asian to Expectation of Success	-0.101	0.076	-0.037 (.181)	-0.091	0.017	No
Hispanic to Expectation of Success	-0.175	0.058	-0.087 (.002)	-0.143	-0.031	Yes
Black to Expectation of Success	-0.033	0.052	-0.018 (.526)	-0.074	0.038	No
Native American to Expectation of Success	-0.252	0.154	-0.042 (.101)	-0.092	0.008	No
H3c. Social class has a potential impact on student Expectation of Success.						
Poor to Expectation of Success	-0.115	0.078	-0.043 (.140)	-0.100	0.014	No
Working class to Expectation of Success	0.000	0.044	0.000 (.997)	-0.053	0.053	No
Upper middle class to Expectation of Success	-0.142	0.043	-0.094 (.001)	-0.151	-0.038	Yes
Upper class to Expectation of Success	-0.067	0.075	-0.020 (.376)	-0.066	0.025	No
H4. Age of cohort will have a differential impact on the Expectations of Success.						
Middle school to Expectation of Success	0.051	0.037	0.036 (.169)	-0.016	0.088	No

Note. Unstd. = unstandardized coefficient. Std = standardized coefficient. SE = standard error; CI = confidence interval. N = Normal-based. LL = Lower limit. UL = Upper limit.

Table 47
Model 5: Hypothesis Summary on Self Esteem

Hypothesis	Unst.	SE	Std. (*p-value*)	95% CI (N) LL	95% CI (N) UL	Hypothesis Supported?
H2a. Parent Autonomy Support directly predicts student Self Esteem.	0.068	0.019	0.105 (.000)	0.047	0.163	Yes
H2b. Student Teacher Relationship directly predicts student Self Esteem.	0.254	0.031	0.264 (.000)	0.203	0.325	Yes
H2c. Peer Shared Values directly predicts student Self Esteem.	0.231	0.036	0.210 (.000)	0.149	0.272	Yes
H3a. Gender has a potential impact on student Self Esteem						
Female to Self Esteem	-0.136	0.027	-0.132 (.000)	-0.182	-0.082	Yes
H3b. Race/Culture has a potential impact on student Self Esteem						
Asian to Self Esteem	-0.138	0.059	-0.067 (.018)	-0.122	-0.011	Yes
Hispanic to Self Esteem	-0.015	0.046	-0.010 (.741)	-0.069	0.049	No
Black to Self Esteem	0.187	0.041	0.136 (.000)	0.078	0.193	Yes
Native American to Self Esteem	0.095	0.120	0.021 (.427)	-0.031	0.073	No
H3c. Social class has a potential impact on student Self Esteem.						
Poor to Self Esteem	0.003	0.060	0.001 (.959)	-0.056	0.059	No
Working class to Self Esteem	-0.005	0.035	-0.004 (.888)	-0.060	0.052	No
Upper middle class to Self Esteem	-0.033	0.034	-0.029 (.333)	-0.088	0.030	No
Upper class to Self Esteem	-0.021	0.061	-0.009 (.725)	-0.057	0.039	No
Middle school to Self Esteem	-0.013	0.029	-0.012 (.652)	-0.066	0.042	No

Note. Unstd. = unstandardized coefficient. Std = standardized coefficient. SE = standard error; CI = confidence interval. N = Normal-based. LL = Lower limit. UL = Upper limit.

Table 48
Model 5: Hypothesis Summary on Mediation

Hypothesis			95% CI (BS) LL	95% CI (BS) UL	Hypothesis Supported?
H2a. Parent Autonomy Support predicts student Self-Esteem, which mediates student Expectation of Success.	Direct (SE)	0.036 (0.031)	*-0.024*	*0.102*	Yes.
	Indirect (SE)	0.028 (0.010)	*0.008*	*0.048*	Indirect Mediation
H2b. Student Teacher Relationship predicts student Self-Esteem, which mediates student Expectation of Success.	Direct (SE)	0.025 (0.045)	-0.058	0.116	Yes.
	Indirect (SE)	0.078 (0.018)	0.046	0.117	Indirect Mediation
H2c. Peer Shared Values predicts student Self-Esteem, which mediates student Expectation of Success.	Direct (SE)	0.277 (0.055)	0.061	0.142	Yes.
	Indirect (SE)	0.094 (0.020)	0.173	0.392	Complementary Mediation

Note. SE = standard error; CI = confidence interval. BS = Bias-corrected Bootstrap.

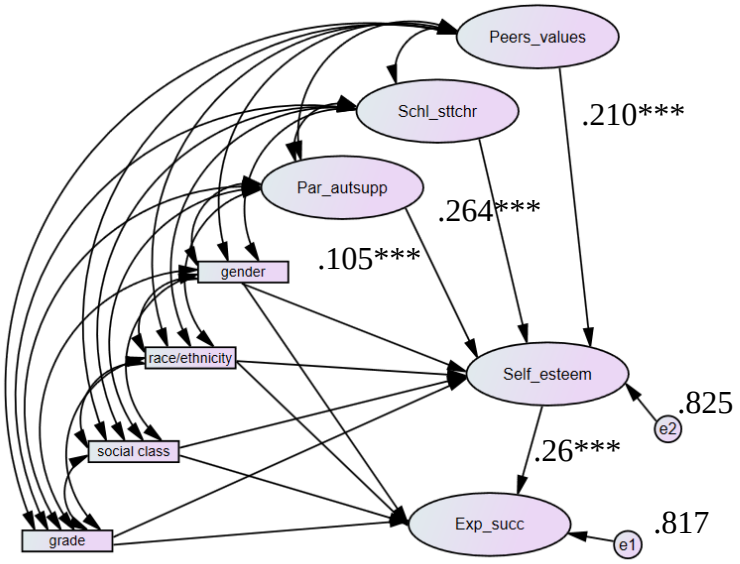

Figure 11. Model 5 Results: The Self, Parent, School, and Peer Systems.

Covariate variables were dummy coded using a reference category.
*p < .05. **p < .01. ***p < .001.

CHAPTER V: Discussion and Conclusion

The purpose of this analysis was to develop and test models of self and social influences on adolescent expectations of success, a proxy measurement related to future time perspective as it measures anticipated economic and career contentment. More information on the role of these variables in relation to adolescent future orientation could address possible needs in school and home structures and in how schools and families work separately and in tandem towards adolescent growth. These models address a weakness in the future time perspective literature by providing insight into the role of social contexts on adolescent expectations of success. The bioecological model has been a useful lens in this study of the complex social network that impacts human development. Yet, the results can be more informative if also viewed through motivational theory that considers sociocultural influences.

Chapters 1 and 2 considered the importance of expectations of success as a measure of optimal adolescent development in that it expresses a level of preparation for the future. The following discussion will address the results of the present study including the impact of the self, parent, school, and peer microsystems, and macrosystem covariates within the models. Possible explanations for results within a bioecological and motivation theory framework, connections to related research, challenges with model building, implications for policy and home and school practices, suggestions for future research, and limitations of the present study will be discussed.

SEM Findings

Common Patterns Among the Models

The overall results of the five models had some trends in common (Table 49, p. 142). Self-esteem consistently and positively predicted expectations of success in all models as a response to Hypothesis 1. This finding supports the previous finding of this researcher that

included self-esteem as a positive predictor of expectations of success (Del Rosso, 2015). It also supports the work of Nurmi and Pulliainen (1991). Adolescents who reported higher levels of self-esteem reported more internal control in regard to future hopes than those with lower self-esteem (Nurmi & Pulliainen, 1991).

Self-esteem was a mediator of the relationship between all three ecological systems and expectations of success in all models where mediation was present as a response to Hypothesis 2. All three ecological variables consistently and positively predicted Self-esteem in response to Hypothesis 2. The findings for Hypothesis 2 are a unique contribution of this study to the literature on adolescent future expectations. There is no known model that has incorporated the ecological systems of self, parent, school, and peers in a relationship with future expectation using a large nationwide sample of adolescents. Relationships between covariate groups and dependent variables had significant results on Expectations of success and Self-esteem in Models 1-4. Most of the relationships seen in those models were also seen in the more comprehensive Model 5 as a response to Hypotheses 3 and 4. The only significant relationships not repeated in Model 5 were a negative difference for Native American students as compared to white students on Expectations of success, a positive difference for Black students in comparison to white students on Self-esteem (Models 2, 3, and 4), a negative difference for upper-class students on Expectations of success as compared to middle class students (Model 4), and a positive difference for younger adolescents in comparison to older students on Expectations of success (Models 1 and 2) and on Self-esteem (Model 2). These findings are addressed below.

Table 49
Summary of Significant Standardized Coefficients and Variance Explained in All Models

Direct to Exp_succ	Model 1	Model 2	Model 3	Model 4	Model 5
Self_esteem	.342***	.333***	.302***	.287***	.260***
Female				-.063**	-.065**
Asian					
Hispanic	-.077**	- .077**	- .078**	- .087**	- .087**
Black					
White					
Native American	-.069**		- .064**	- .072**	
Poor					
Working-class					
Upper middle-class	-.094**	- .104***	- .1***		- .094***
Upper-class				- .083**	
Middle School	.045***	.070**			
Variance Explained (R^2)	14.6%	15.2%	15.1%	18.3%	18.3%

Direct to Self_esteem	Model 1	Model 2	Model 3	Model 4	Model 5
Parent_autsupp	(-)	.097***	(-)	(-)	.105***
School_sttchr	(-)	(-)	.316***	(-)	.264***
Peers_values	(-)	(-)	(-)	.285***	.210***
Female	(-)	- .110***	- .102***	- .140***	- .132***
Asian	(-)		- .061***	- .069*	- .067*
Hispanic	(-)				
Black	(-)	.124***	.151***	.101***	
White	(-)				
Native American	(-)				
Poor	(-)				
Working-class	(-)				
Upper middle-class	(-)				
Upper-class	(-)				
Middle School	(-)	.055*			
Variance Explained (R^2)	(-)	4%	12.6%	17.5%	17.5%

Mediation through Self_esteem	Model 1	Model 2	Model 3	Model 4	Model 5
Parent_autsupp	(-)	Comp	(-)	(-)	Indirect
School_sttchr	(-)	(-)	Comp	(-)	Indirect
Peers_values	(-)	(-)	(-)	Comp	Comp

Note. Blanks represent non-significant values. Comp = Complementary. (-) = No relationship in model. For mediation typology, see Zhao et al. (2010).
*p < .05. **p < .01. ***p < .001.

Hypothesized & Realized Latent Constructs

Latent Constructs Realized

Each latent construct within the initial models was hypothesized to form a single factor from a large selection of indicator variables. Expectations of success, Self-esteem, Parent autonomy support, and Student-teacher relationship had five to twelve possible hypothesized indicators, yet, three indicator variables for each construct emerged from the EFA's. This may have limited the range of the meaning behind some constructs.

Expectations of success was hypothesized to be a broad indicator of adolescent expectation for the future. The 12 possible indicator variables that described it included measures of family, community, and life satisfactions. The EFA resulted in three indicator variables that focused on career contentment and economic success. While these hopeful futures also emerge from adolescent interviews on future expectations (Nurmi, 1989a), they also provide a more narrow interpretation that needs consideration in the analysis of the results. This representation of Expectations of success in the models may have influenced the results on covariate relationships.

The nine possible indicator variables for the construct Self-esteem consisted of four positive and four negative descriptors. The three indicators that arose were all positive and reflective of global self-esteem as seen within other research models (Marsh, 1986). They were also indicators clearly found on the Rosenberg Scale of Self-esteem (Robinson et al., 1991, p. 120). This added to their robust nature as an important mediator in the models.

Parent autonomy support was hypothesized to be a broad indicator of adolescents who were allowed the opportunity to be strong participants in decision-making that impacted their daily and future lives. This construct has been characterized in the literature to provide

adolescents with input and practice in mature self-regulatory behavior and to develop a sense of competence (Roth, 2008). The three indicator variables that emerged from the EFA focused on three different but important aspects of adolescent choices: class choices, sport participation, and other activities. Even though the original array of ten possible indicators was reduced, these observed variables could be considered areas related to personal interest and areas of efficacy and might make important contributions to identity formation.

The Student-teacher relationship construct began with five indicator variables. They included four positive items and one negative item, ending with three positive items. The final indicator variables focused on elements of academic support and closeness. These are key areas in other research that has found positive student-teacher relationships to correlate with more adaptive student behaviors while in school (Baker, 2006; Hamre & Pianta, 2001) and projections about future emotional and academic attainment (Wong et al., 2019). Student-teacher relationships had a positive significant relationship to adolescent career expectations through the mediators of school sense of belonging and educational expectations.

The Peer-shared values construct began with a dichotomous group of indicators characterized by an academic or social focus. The academic focused indicators that emerged depicted three areas of academic success (attendance, study, and grades). This finding supports research which describes peer relationships as academically motivating and a possible source of school engagement (Lynch & Cicchetti, 1997). In a longitudinal study that combined statistical cluster analysis as well as logistic multiple regression, students were followed from seventh grade through high school to assess common characteristics and peer affiliations in relation to drop out rate (Cairns, Cairns, & Neckerman, 1989). An analysis of peer networks demonstrated within-group incidence of school drop out for boys and girls. Seventh-grade peer affiliations

were an indicator of clusters for students who dropped out later in high school. This connection to peers could be considered an affiliation of shared values and is inline with the bioecological model for influence on the self via the peer microsystem. It is also in line with the findings of the present analysis, which demonstrated a complementary mediated effect for peer-shared values on expectations of success through self-esteem. It might be theorized that peer affiliations have impact on school engagement and may act as regulators of behavior for both positive and negative outcomes. It would be a benefit for future research to explore this relationship as well as moderators for this affiliation in order to affect the most positive outcomes for at-risk students. Mental health initiatives that address known at-risk student cohorts are a growing phenomenon in today's schools. The benefit of school wide mental health policy initiatives might act as a safety net for capturing peer group affiliations en masse, which could have a modulating effect on negative peer group influences (Fazel, Hoagwood, Stephan, & Ford, 2014; Rones & Hoagwood, 2000).

Latent Constructs Not Realized

The original five models included 11 latent constructs that were hypothesized to influence adolescent expectations of success but were not realized from the Sloan data. Behavioral regulation was the only construct that had strong psychometric properties in the EFA and CFA but failed SEM invariance testing (Table C3, p. 207). One possible issue may have been the extreme behavior that the final construct represented. The more extreme responses (disciplinary transfer, picked up by police, and arrested) may have created more variance, which the EFA algorithm captured in the calibration group sample. This was not true for the validation group. The two most common limiting psychometric properties for the remaining 10 latent constructs were poor convergent validity as evidenced through AVE scores and low average

factor loadings (Table 50, p. 146). Five of the 11 latent constructs signaled issues with factorability through low covariance matrix correlations, whereas the remaining six did not have issues with factorability (except for two with low KMO scores). Seven of the 11 constructs had low Alpha, Omega, AVE, and RRC scores. The latent constructs Effort, Parent passive supervision, and Parent communication had acceptable Alpha and Omega scores; but low AVE, signaling issues convergent validity. Effort also had low RRC, signaling issues with reliability. Convergent validity is a measure of variance in common among indicator variables. Construct reliability is also a measure of internal consistency. Divergent validity was not an issue among any of the constructs. The Sloan data set was not designed for SEM or to specifically capture certain latent constructs. A more detailed look at its questionnaire structure as compared to established scales might expose the need for differently worded items to better capture the constructs of interest.

Table 50
Overall Psychometric Trends for Latent Constructs Not Realized from Sloan Data

Latent Constructs Not Realized	Overall Trends
Effort Self: Locus of control, Valued future goals Parents: Parent school involvement, Parent communication, Parent supervision School: School climate, Perceived academic challenge Peers: Peer shared values (social)	• Issues with factorability (covariance matrix values) • Poor reliability (low Alpha, Omega and/or RRC score) • Low average factor loadings • Issues with convergent validity (AVE score) • Low SMC values

Note. RRC = Raykov's reliability coefficient. AVE = average variance extracted. SMC = squared multiple correlations

Subject Level Variables

General Trends

The relationships of subject gender, minority status, and socioeconomic class membership with the latent construct Expectations of success may have been influenced by its

representation through a somewhat narrow scope of indicator variables. Females had a significant and negative difference in expectations of success as compared to males in Models 4 and 5 and a significant negative difference in self-esteem as compared to males in Models 2 through 5. Asian students had no differences in expectations of success from white students but had significant and negative differences in self-esteem in Models 3, 4, and 5. Hispanic students had significant and negative differences in expectations of success from white students in all five models but no differences in self-esteem. Females and students from Latino/a and Asian backgrounds may be responding to larger societal forces that imply limits to future career and economic successes. Black students had no significant differences from white students in expectations of success but had significant and positive differences in self-esteem from white students in Models 2, 3, and 4. There may be contributors to self-esteem that have a larger degree of impact for African American students. Native American students had significant and negative differences in expectations of success from white students in Models 1, 3, and 4 but no differences in self-esteem. The findings for Native American students are not generalizable as the sample size was very small (4 students). (Table 49, p.142)

Gender

Self-evaluative measures, including self-esteem, and ideas related to career aspirations may have roots in early socialization. Five-year old boys and girls described gender ambiguous characters that were portrayed as very smart as pertaining to their own gender to a similar degree with no significant difference (Bian, Leslie, & Cimpian, 2017). Six and seven-year old children differed in this task by gender. Girls were significantly less likely than boys to assign the smart character to their own gender. When asked to choose between two novel games, one for really smart children and one for children that work hard, six and seven year old girls were

significantly less likely to choose the game for smart children. Middle school students, who expressed an interest in science as a career, tended to have a growth mindset and a science possible self (belief that one can become a scientist). Older girls tended to have a fixed mindset as compared to younger girls (Wonch Hill et al., 2017). Interjections on ability and interests can influence girls at multiple developmental time points. Parental influences for girls in childhood can encourage academic interests in science and math careers through support for extracurricular science and math activities and broader gender roles (Simpkins, Davis-Kean, & Eccles, 2006). Throughout childhood and adolescence, girls' interest in math and science can be positively influenced by likeminded female friendships (Riegle-Crumb, Farkas, & Muller, 2006).

Reciprocal experiences between self-evaluative measures, such as self-esteem and thoughts about career trajectories seem to be especially potent for female college students (Dickerson & Taylor, 2000). Female students admitted to a lack of knowledge about science, technology, engineering, and math (STEM) careers. They also accepted the idea that those careers might represent a male stereotype and offer less opportunity for a societal role that is nurturing. An in-depth look at the motivations and experiences of college freshman sought to locate possible influences on interest in STEM careers by gender (Diekman, Brown, Johnston, & Clark, 2010). Those who valued communal goals were often female, which negatively predicted STEM interest. The authors believed that females are often misinformed that STEM careers are mainly agentic in nature. They believe that if young women understood the possibility of communal contribution through a STEM career they might choose it. In addition, as young women become engaged in STEM careers, retention can be an issue. Helping women to dispel gender stereotypes and encourage a sense of belonging in the field could aid retention (Miyake et al., 2010; Stout, Dasgupta, Hunsinger, & McManus, 2011).

Race/Ethnicity

Latino/a populations are rising throughout the US (Hussar & Bailey, 2013) and demonstrate some gradual increases over time in achievement behaviors through high school (decreased drop-out rate) as well as growing college enrollment rates but not at the expected rate for their rise and proportion in the population (Krogstad, 2016). Gendered differences within the Latino/a community may be attributed to differences in family outlook and supports (Ovink, 2014). Latinas are surpassing Latinos in educational attainment. Females are more often encouraged to pursue higher education as compared to males due to family interpretation of needs by gender. Females are seen as needing more support towards independence. It is difficult to say if gendered differences influenced the lower expectations of success among Hispanic populations as compared to Whites found in this analysis.

Negative differences in self-esteem were noted in the present analysis for Asian students in Models 4 and 5. Asian youth had a significant negative difference from White youth for self-esteem in Models 4 and 5 but not a significant difference in expectations of success in this analysis. Jang (2018) studied within racial group differences along with comparisons to the dominant culture to more clearly uncover influences to inequalities for Southeast Asian high school students. While achievement levels were high for both female and male students as compared to other racial groups, females had a lower instance of aspiration to higher education than their Asian male counterparts. Jang sees these differences as a co-mingling of unique patriarchal views in many Southeast Asian cultures and the perpetuation of inequalities through a lack of school organizational characteristics that might help ameliorate this discrepancy through student and family outreach. The present analysis may have co-mingled this phenomenon in measures of self-esteem as compared to the White population. In addition, as in other racial and

ethnic groups, there are many different regions and sub-cultures inherent in the Asian population that may not have been accounted for in the measurement of this demographic.

Black youth had a significant positive difference from White youth in self-esteem in all models but not in expectations of success. There has been a long history of research on racial differences for self-esteem, especially between Black and White populations. Historically biased views made the assumption that African Americans would experience negative differences in self-esteem based on their experiences of negative stereotypic messages (Van Laar, 2000). But research has revealed that African American adolescents demonstrate higher measures of self-esteem than their White peers in high school and college samples (Rowley, Sellers, Chavous, & Smith, 1998).

In a college sample of African American students, measures of racial centrality (a measure of the salience of racial identity to one's self-concept and identity) and public regard (how one feels others view African Americans) were not significant predictors of self-esteem. Private regard (one's personal view of African Americans) was a significant predictor of self-esteem. When racial centrality was split into a dichotomous variable and measures of low/high racial centrality were compared in a model, high racial centrality was a significant and positive predictor of personal self-esteem. It seems that the level of racial identification was an important component in prediction of self-esteem (Rowley et al., 1998). The high school sample of African American students had similar findings in levels of measured constructs, demonstrating the importance of racial identity across two adolescent age groups (Rowley et al., 1998).

Socioeconomic Class

There was a significant negative difference in expectations of success among upper middle class as compared to middle class youth in Models 1, 2, 3, and 5 and between upper class

and middle class youth in Model 4. The career and economic focus of the Expectations of success construct represented in the present analysis may have influenced this result. Occupational choices have connections to identity formation, especially during the transition to adulthood (Erikson, 1963) and are also indicative of economic expectations of the future (Furstenberg, 2010; Shanahan, 2000). Occupational aspirations of college students are strongly associated with socioeconomic class position (Hitlin, 2006; Schoon, 2001). It is reasonable to extend this as a syllogism that economic aspirations, identity formation, and socioeconomic class are intertwined.

Middle and upper middle class college students characterized their own social positions as relatively advantageous and preferential to those of income classes both above and below them (Stuber, 2006). When asked to compare the experience in their income stratum to those of other income stratums, both groups compared themselves to classes above their own. Both groups expressed their own position as relatively humbler than others. Neither group compared their experiences to a peer with a lower income class than their own. Working class peers described the differences in increased opportunity and experience of their upper middle class peers. Upper middle class students described their experience as more limiting than peers in a higher social income stratum, often deriding their own possessions, including cars and clothes, and feeling like their experiences had limitations placed on them such as budget vacations rather than high-end travel. They did not consider peers who had neither (Stuber, 2006). It may be a tendency for young adults to have concerns of maintaining and/or raising their own socioeconomic class status. This trend could lead to upper middle class students being more concerned than lower income peers about ultimate career and economic successes. Aries and Seider (2007) suggest that students with exposures to peers with different socioeconomic class

backgrounds offer the impetus for identity exploration and reflection. Duffy (2007) encourages institutional models that increase socioeconomic class diversity via access and financial and retention supports as a benefit for all students. Students from lower income stratum get broadened opportunities and support for completion while all students benefit from more diversified exposure.

Age

The present analysis revealed a significant positive difference for students in middle school as compared to high school on Expectations of success for Models 1 and 2 and Self-esteem for Model 2 only. Those models isolated the influence of the construct of Self-esteem on Expectations of success (Model 1) and the influence of the constructs Parent autonomy support and Self-esteem on Expectations of success (Model 2). Regressors in a model have to be interpreted in light of other predictors. When other predictors were added in later models the impact on Self-esteem and Expectations of success on middle school students may have been minimized. In isolation, Parent autonomy support seems to make a positive impact more so on middle school students than on high school students on Expectations of success and Self-esteem. When Student-teacher relationships and Peer-shared values are added to the model this effect was minimized. These latter variables represent the school environment, especially in consideration that Peer-shared values had an academic focus. This may have increased the influence of these constructs on the outcome.

There is contradictory evidence of changes in self-esteem in adolescence during middle and high school years including rises (Roeser & Eccles, 1998) and decreases (Zimmerman, Copeland, Shope, & Dielman, 1997) as well gendered differences often favoring boys (Block & Robins, 1993; Quatman & Watson, 2001). The transition from elementary to middle and high

schools can be a demanding one for children while undergoing great physical and psychosocial changes. It is not surprising that there are fluctuations in self-esteem at this time, developmentally. While individual differences may affect outcomes, overall, children are faced with challenges to their worth and competence and benefit from carefully thought out transition supports (Jindal-Snape & Miller, 2008). What seems most important is to not allow declines in self-esteem to influence other essential psychosocial factors that may make retention and academic success in high school more difficult. Humphrey (2004) sees the concept of self-esteem (personal worth) inexorably linked to two other concepts of self: self concept (perceived competencies) and ideal self (aspirations). He holds the viewpoint that self-esteem has a bearing on achievement and calls for careful execution and review of research. Self-esteem is both a global and domain specific concept. It is appropriate to be used as a mediator between ability and achievement. The present analysis did not realize the variety of social construct influences on expectations of success as hoped for. More detailed research in the future may help to shed light on adolescent trends in self-esteem and their impact on expectations of success.

The Bioecological Model and Self-Determination Theory

The Bronfenbrenner bioecological model (Bronfenbrenner & Morris, 2006) applied in this analysis offered a framework of four elements to conceptualize social context influences on the self. The Process-Person-Context-Time (PPCT) structure invites the consideration of important environments towards moving human development forward. The bioecological model acknowledges that individuals come into the world with a set of capabilities. The dynamic nature of the human condition involves the forces that act upon the individual as well as the individuals' response to those forces. Social interactions within the bioecological model are agents of action in their influence on the self.

Self-esteem and expectations of success are elements of the self in this analysis that are affected by the proximal processes of environmental interaction and are important indicators of adolescent psychosocial development. The exploration of self-esteem as a mediator can help us to better understand how agents of action create change in human development. The existence of self-esteem may be based on an evolutionary purpose to acquire and use information regarding the reflection of how one is perceived by others in order to manage social group inclusion (Barkow, 1980). The value of maintaining group connections and building relationships has evolutionary advantage for survival and procreation. Self-esteem incorporates an affective response to group acceptance and/or rejection that is related to changes in perceptions of belonging (Leary & Baumeister, 2000). The management of self-esteem during goal pursuit, including fluctuations that inevitably come with short term successes and failures, help with the management of behavior regulation towards the realization of goals (Crocker et al., 2006). Rather than cognitive in nature, self-esteem may operate as a motivational affective process that drives psychosocial outcomes (Leary & Baumeister, 2000).

While the Bronfenbrenner paradigm offers a structure to view the broad social world of adolescents, motivational theory can help to understand the operations of motivational processes. Social contexts, through social interaction, can impact motivation. Expectations of success in the models of the present study measured the future orientation of adolescents' career and economic successes. We can ask how students develop these beliefs through interaction with important actors in different social contexts. Self-determination theory (SDT) articulates the importance of three basic psychological needs, competence (mastery), autonomy (agency), and relatedness (belonging) (Deci & Ryan, 2008b). These needs intrinsically motivate individuals to act. Self-determination theory has three basic assumptions to explain the ways social context influence

human behavior. These assumptions relate to the inherent tendencies in all individuals to strive for these basic psychological needs, the requirement for environmental support towards need attainment, and to develop internalized self-regulatory behavior through active engagement with the environment.

SDT has been extended by six sub-theories that help to isolate characteristics of individual human behavior in interaction with social contexts that explain why some students flourish and some do not (Deci & Ryan, 2008a; Liu, Wang, & Ryan, 2016). These sub-theories focus on aspects of human motivation such as extrinsic and intrinsic motivation, individual differences in personality orientations in regard to causality (autonomous versus controlled), the importance of basic needs satisfaction (competence, autonomy, and relatedness) in regard to individuals and culture, the nature of goal pursuit, and the nature of relationships as mutually satisfying. This complex macro-theory of motivation has useful elements to aid in the understanding of the motivational force of social context on Expectations of success.

Parents and teacher relationships can motivate adolescents with regard to the level of basic need satisfaction they offer (Soenens & Vansteenkiste, 2010; Wang, Pomerantz, & Chen, 2007). Parent autonomy support may offer an adolescent the support needed to fulfill basic needs towards an autonomy-orientation and more intrinsic goal pursuit. Cultural influences are considered in terms of how various parenting practices are viewed. A western interpretation of practices as controlling might be seen in another culture as supportive in the sense they communicate caring and engagement (Nelson, Hart, Yang, Olsen, & Jin, 2006). Yet, parental autonomy supportive practices had a similar predictive relationship to adolescent social initiative and parental control had a similar predictive relationship to adolescent depression and antisocial behavior across multiple cultures and continents (Barber, Stolz, Olsen, Collins, & Burchinal,

2005).

The indicator variables for Student-teacher relationships in the present study have the element of empathetic support (teaching is good, teachers are interested in me, teachers listen) and could be markers of autonomy supportive practice. Such practice is demonstrated by a variety of autonomy-focused motivational procedures such as recognizing and nurturing inner motivational resources through curiosity and challenge, providing explanatory rationales to give value and meaning in learning, use of non-controlling language, patience, and acknowledging expressions of negative affect as an appropriate response to demands (Reeve, 2011). In addition, this practice can be mutually satisfying and beneficial as students learn and teachers feel more effective in their role through being in sync with student needs (Lee & Reeve, 2012). In these ways, teachers can promote learning through engagement. Peer-shared values in the present study might be viewed within SDT as a source of a mutually satisfying relationship (Deci, La Guardia, Moller, Scheiner, & Ryan, 2006). Positive peer relationships are associated with greater academic achievement (Guay, Boivin, & Hodges, 1999; Im et al., 2016) and school engagement (Im et al., 2016).

Overall results of the present study point to the importance of social relationships to adolescent growth and future orientation. With the added lens of SDT, these social contexts have the potential to support the growth of competencies that lead to autonomous self-regulation, a key element that the adult workforce demands. These results also indicate a need to be aware of adolescent trajectories in middle and high school. Students displaying issues with self-esteem, association in academically negatively oriented peer cohorts, and limited parental supports are targets for interventions via school wide mental health initiatives. Interventions through autonomy supportive teacher practice could also help ameliorate such negative factors. These

school wide systems of support could be enhanced with larger policy initiatives at the teacher education level. Teachers entering school systems might be better prepared to interact and serve students with a diverse need of academic and emotional supports. Teacher preparation that included autonomy supportive practice, skill in curricular planning for special needs, and the support of like-minded counselors and school psychologists would be most beneficial. The availability of specialized counselors would contribute to psychological supports for the most needy students as well as aid in post-graduation transition.

Limitations

This analysis includes several limitations for consideration. The questionnaire items from the Sloan study relied on student self-report. This procedure does not allow for verification in regard to students' internal experience of school, parent and peer perceptions. Although student report of internal experiences are valid measures, the analysis would be stronger if other observational data was included to corroborate student reports such as measures of autonomy support via parent report or measures of student teacher relationship via teacher account.

Two other limitations in this study were the use of cross-sectional data, which limits inferences in regard to causal effects and the limited number of reliable and valid factors that emerged from Study 1. Future research may be able to apply new data, which uses an extended NELS questionnaire format, to the models discussed here with the possibility of application to a longitudinal analysis. As reported in Table 49 (p. 142), there was a relatively low to moderate range of R^2 values among the five models. Exploration into model building with constructs that have strong predictive power on adolescent future orientation could develop a model with increased variance explained.

Lastly, the use of demographic covariates as singular comparisons provided a view of

relative differences between covariates and a target reference group but did not account for intersectionality among demographic characteristics of students. Important differences among students with intersecting identities of gender, race, social class, and age require an approach that considers such identities in relationship to each other. Perceptions on gender, race, socioeconomic class, and age are communicated on many levels in society, which, in turn, affect individual responses via beliefs and behaviors and often are implicit in shaping identities (Frable, 1997). This supports the idea of identities as social construction.

Individuals often have membership in multiple realms of identity that intersect in the influence they receive from macro- and micro-systems and in their responses to these influences. Research paradigms often acknowledge that the experience of intersectional identities has varied outcomes including those pertaining to resources, opportunities, and expectations and these experiences are related to the dynamics of a dominant culture (Tefera, Powers, & Fischman, 2018). There is a growing body of discourse to suggest that the use of intersectionality as representation of concurrent "entanglements of inequalities" (Roth, 2013, p. 6) should also consider the fluidity of those entanglements and how resources, opportunities, and expectations may change according to context (Butler, 2018; Robert & Yu, 2018; J. Roth, 2013). Such considerations would place covariate membership into a more multi-dimensional view.

Future Directions

General Historical Comparison

While it may be difficult to replicate the national scope and subject size of the Sloan data, it would be informative to make a historical comparison with today's adolescent population. Through smaller regional samples, the present models could be repeated for a direct comparison of results with a lens on the social, economic, and political milieu for both time periods. The

students of the late 1990's faced issues as first generation college entrants. Over time, career shifts may be related to a changing demographic in education and mobility (Lyons, Ng, & Schweitzer, 2014; Lyons, Schweitzer, & Ng, 2015). Use of the present model could shed light on the impact of such historical change.

Current Constructs Improved in the Measurement Model

Ideally, an additional study might be done with more comprehensive models with a longitudinal sample. There is strong empirical support for the inclusion of the latent constructs not realized in the measurement models in the present study. The use of established scales for latent constructs might provide higher reliability and validity during the factor analysis phase and may also guard against issues of invariance. This approach might provide a more comprehensive view of the social contexts than provided by the five models described. The use of an established scale for a broader measure of expectations of success that includes a variety of domains of interest (education, career, interpersonal) (McWhirter & McWhirter, 2008) would be very informative and may ameliorate possible issues with the more narrow scope in the present models.

Addressing the Limited Variance Explained in the Structural Model

The present models had room for improvement in the amount of variance explained for Self-esteem and Expectations of success which additional explanatory constructs could contribute to. Since the primary focus of the present analysis is to uncover significant relationships that impact Expectations of success, those will be the focus of this conjecture for model building. Two possible causes for the present results were the finite number of constructs available from the Sloan data versus those hypothesized for the models and the possibly narrow scope of the constructs that resulted from the factor analyses.

Potential Predictors of Expectations of Success

The research on adolescent future orientation, social contexts, and self-system variables allow some conjecture as to what other latent constructs may contribute to the variance explained for Expectations of success. There are significant predictive relationships between social context variables and future orientation. A meditational and longitudinal model tested the communal nature of Family Connectedness (a measure of closeness) and School Connectedness (a measure of school belonging via teacher and peer supports and sense of community) for middle and high school students as predictors of adolescent Future Orientation (a measure of consideration and planning about the future) at three time points, the present, and one and two years in the future (Crespo, Jose, Kielpikowski, & Pryor, 2013). Family and School Connectedness predicted Future Orientation indirectly and through each other when future measures were positioned as mediators. Both Family and School Connectedness had a significant positive direct relationship with Future Orientation from each time point to the next. Family and School Connectedness through time points one and two explained 52% of the variance in Family Connectedness, 39% of the variance in School Connectedness, and 34% of the variance in Future Orientation at the third time point. This level of variance explained might make Family and School Connectedness measures valuable predictors of Expectations of Success.

Supports from parents, teachers, and peers are also associated with measures of engagement with school (Wang & Eccles, 2012). While a usual, developmental decline in school engagement measures has been found over middle and high school years, social supports from teachers, parents, and peers marked a significant decrease in the rate of decline for school compliance, participation in extra curricular activities, identification with school, and the subjective value of learning (Wang & Eccles, 2012). In the case for peer social support, the rate

of decline of school compliance was associated with connections to prosocial peer groups rather than antisocial.

School engagement has been a successful predictor of a positive and adaptive orientation to the future (Archambault, Janosz, Fallu, & Pagani, 2009; Horstmanshof & Zimitat, 2007). Family and school connectedness was associated with lowered levels of depression and less suicidal ideation for at risk youth (Foster et al., 2017). It is believed to be a buffer against experiences that put youth at high risk, such as bullying, and so allows for more adaptive functioning. School connectedness was associated with lowered conduct problems for academically at risk youth, an indicator that it promotes self-regulatory behaviors (Gerard & Booth, 2015).

A predictive model for adolescent expectations of success that strives to maximize explained variance might attempt to capture these constructs. In addition to the three constructs utilized in Model 5 (Parent autonomy support, Student-teacher relationship, and Peer-shared values), the constructs of Family and School Connectedness and School Engagement could produce models that might capture more of the variance explained for Expectations of success. An additional improvement to the models would involve a review of the latent constructs realized and not realized in the analysis. Some constructs may have been defined too narrowly. An update of questionnaire items may create more robust measures. This may have impacted the amount of variance explained for Expectations of success and also impacted the response of subject level variables in the models. In addition, latent constructs not realized from the Sloan data might be recaptured with more established measures that would better ensure reliability and validity.

Conclusion

This analysis began as an effort to shed light on the influences of adolescent expectation of success, an important measure of optimal adolescent development. The findings here have given cause to explore other related research and to reflect on ways that parent, teacher, and peer relationships might be nurtured towards positive adolescent development. The reliability and validity of the latent constructs that were applied and good fit to the data for each model as well as resistance to invariance testing were also important results. In addition, the realization of valid latent constructs that represented the self, parent, school, and peer microsystems enabled exploration into their influences on adolescent Expectation of success.

These relationships, along with important variables that represent macrosystem influences might be further studied to investigate the processes inherent in future goal formation and realization. These variables are also related to the intricacies of social-emotional growth and competencies that lead to the capacities most sought out by future employers. Future research that develops these models by adding constructs known to influence adolescent future orientation would add additional useful information for policy and practice.

The bioecological paradigm contributed a view of social contexts on adolescent Expectations of success through the PPCT model. Self-Determination Theory points to the complex mechanisms that drive individuals to fulfill basic psychological needs towards autonomy, growth in competence, and relatedness. The present analysis has allowed a view of the aspects of individual selves and social contexts that affect important outcomes of adolescent Self-esteem and Expectations of success. It is hoped that this analysis adds to the body of work that reinforces the view of individual development as dynamic and a useful look at the application of research towards beneficial outcomes for adolescents.

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Appendix A

Table A1
Proposed Latent Construct Definitions

Proposed latent construct	Definition
Expectations of success	"The human ability to anticipate future events, give them personal meaning, and to operate with them mentally" (Nurmi, 1991, p. 4)
Future time perspective	"The degree to which and the way in which the chronological future is integrated into the present life-space of an individual through motivational goal-setting processes" (Husman & Lens, 1999, p. 114)
Effort	"The amount of time and energy that students expend in meeting the formal academic requirements established by their teacher and/or school" (Carbonaro, 2005, p. 28).
Self-regulation	Individuals "seek to exert control over their thoughts, their feelings, their impulses and appetites, and their task performances" (Baumeister, Gailliot, DeWall, & Oaten, 2006, p. 1)
Self-esteem	A sense of worthiness developed through the interplay of social and environmental interaction (Bandura, 1986).
Locus of control	The ascription of achievement outcomes to internal and controllable causes [ability and effort] or external and uncontrollable causes [chance or luck] (Rotter, 1966),
Valued future goals	Important personal aspirations that provide incentive for action) (Miller & Brickman, 2004a).
Parent autonomy support	Allow input into decision-making and acknowledgement of individual viewpoint (Deci et al., 2001)
Parent school involvement	Interaction with schools towards the child's success including volunteering and teacher communication (Hill et al., 2004)
Parent communication	Demonstrating interest in school activities and progress through discussion (Fan & Chen, 2001)
Parent supervision	Knowledge and concern of a child's activities and location (Herman et al., 1997)
Academically focused peers	Act as models of behavior towards realizing achievement goals (Goodenow & Grady, 1993)
Socially focused peers	Popularity and socially active behavior is important
School climate	A perceived supportive environment with fair rules and school spirit (Coker & Borders, 2001; Simons-Morton & Crump, 2003)
Student teacher relationship	A measure on a continuum of closeness vs. conflict (Ladd & Burgess, 1999)
Perceived challenged	Typically encompassing the amount of work expected to prepare for class and effectiveness of the teaching/learning process (Payne et al., 2005)

Table A2
Proposed Latent Factor: Expectations of success

Sloan study variable number	Questionnaire item from TLQ
445	Chances that R will graduate from HS
446	Chances that R will go to college
447	Chances R will have a job that pays well
448	Chances that R will be able to own home
449	Chances R will have a job s/he enjoys
450	Chances R will have a happy family life
451	Chances R will stay in good health
452	Chances R will live anywhere
453	Chances R will be respected in community
454	Chances R will have friends to count on
455	Chances R's life better than parents
456	Chances R's children's life better than R's

Table A3
Proposed Latent Factor: Perceived Academic Effort

Sloan study variable number	Questionnaire item from TLQ
291	R tries as hard as possible in math
292	R tries as hard as possible in English
293	R tries as hard as possible in history
294	R tries as hard as possible in science

Table A4
Proposed Latent Factor: Self-esteem

Sloan study variable number	Questionnaire item from TLQ
346	R feels good about self
349	R feels s/he is a person of worth
350	R able to do things as well as others
353	On the whole R is satisfied with self
354	R feels useless at times
355	At times R thinks s/he is no good at all
357	R does not have much to be proud of
359	R usually feels emotionally empty

Table A5
Proposed Latent Factor: Locus of Control

Sloan study variable number	Questionnaire item from TLQ
347	R does not have enough control over life
348	Good luck more important than hard work
351	When getting ahead somebody/thing stop R
352	R feels plans hardly ever work out
356	When make plans R is certain they work
358	Chance, luck very important for R's life

Table A6
Proposed Latent Factor: Behavior Regulation

Sloan study variable number	Questionnaire item from TLQ
199	How many times R was late for school
200	How many times did R cut/skip classes
201	How many times R got in trouble
202	How many times put on in-school suspension
203	How many times R suspended from school
204	R transferred for disciplinary reasons
205	R picked up by police
206	How many times R was arrested

Table A7
Proposed Latent Factor: Valued Future Goals

Sloan study variable number	Questionnaire item from TLQ
399	Important being successful in line of work
400	Important finding right person to marry
401	Important having lots of money
402	Important having strong friendships
403	Important to be able to find steady work
404	Important to help others in community
405	Give own children better opportunities
406	Important living near parents, relatives
407	Important getting away from this area
408	Working to correct economic inequalities
409	Important having children
410	Important having leisure time
411	Important getting away from parents

Table A8
Proposed Latent Factor: Parent School Involvement

Sloan study variable number	Questionnaire item from TLQ
86	Parents attended school meeting
87	Parents called teacher or counselor
88	Parents attended school event r was in
89	Parents volunteered at school

Table A9
Proposed Latent Factor: Parent Communication

Sloan study variable number	Questionnaire item from TLQ
90	Discussed school courses with parent
91	Discussed school activities with parent
92	Discuss things studied in class w/parent

Table A10
Proposed Latent Factor: Parent Supervision

Sloan study variable number	Questionnaire item from TLQ
97	Parents check whether R has done homework
98	Parents help with homework
99	Parents give privileges for good grades
100	Parents limit privileges for poor grades
101	Parents assign household chores
102	Parents limit TV watching/videogame time
103	Parents limit time with friends
104	Parents investigate who R's friends are
105	Parents investigate where R goes at night
106	Parents investigate how r spends money
107	Parents investigate R's free time
108	Parents investigate where R is after school

Table A11
Proposed Latent Factor: Parent Autonomy Support

Sloan study variable number	Questionnaire item from TLQ
110	Who decides how late R can stay out
111	Who decides which friends R can be with
112	Who decides what classes R will take
113	Who decides if R can have job
114	Who decides when R can leave school
115	Who decides how R will spend money
116	Who decides if R can date
117	Who decides if R should go out for sport
118	Who decides if R can do other school activity
119	Who decides if R should go to college

Table A12
Proposed Latent Factor: School Climate

Sloan study variable number	Questionnaire item from TLQ
170	Students get along well with teachers
171	There is real school spirit
172	Rules are strict at school
173	Discipline is fair in school
174	Students friendly with other racial groups
175	Students often disrupt class
180	Other students often put R down
182	R does not feel safe at this school
183	Disruptions impede R's learning
184	Misbehaving students get away with it

Table A13
Proposed Latent Factor: Student-Teacher Relationships

Sloan study variable number	Questionnaire item from TLQ
176	The teaching is good at school
177	Teachers are interested in students
178	Teachers praise hard work
179	Teachers often put R down
181	Teachers really listen

Table A14
Proposed Latent Factor: Perceived Academic Challenge

Sloan study variable number	Questionnaire item from TLQ
295	R is challenged to use mind in math
296	R is challenged to use mind in English
297	R is challenged to use mind in history
298	R is challenged to use mind in science

Table A15
Proposed Latent Factor: Peer-Shared Values (Academics)

Sloan study variable number	Questionnaire item from TLQ
369	Among friends, regular attendance important
370	Among friends, how important to study
372	Among friends, how important get good grades
374	Among friends, how important finish HS
377	Among friends, how important school past HS

Table A16
Proposed Latent Factor: Peer-Shared Values (Social)

Sloan study variable number	Questionnaire item from TLQ
373	Among friends, how important be popular
375	Among friends, how important boy/girlfriend
376	Among friends, how important party/get wild

Table A17
Profile of Respondents Missing Data

	Frequency	Percent	Cumulative
No Miss	1,135	28.9	28.9
Low Miss	2,073	52.77	81.67
High Miss	720	18.33	100
Total	3,928	100	

Table A18
Profile of Respondents Missing Data by Gender

Gender of Student	No missing	Low missing	High Missing	Total
Male	474 [a]	931	357	1,762
	509.7 [b]	930.8	321.5	1,762.00
	26.9 [c]	52.84	20.26	100
	41.76 [d]	44.91	49.86	44.9
	12.08 [e]	23.73	9.1	44.9
Female	661 [a]	1,142	359	2,162
	625.3 [b]	1,142.20	394.5	2,162.00
	30.57 [c]	52.82	16.6	100
	58.24 [d]	55.09	50.14	55.1
	16.85 [e]	29.1	9.15	55.1
Total	1,135 [a]	2,073	716	3,924
	1,135.00 [b]	2,073.00	716	3,924.00
	28.92 [c]	52.83	18.25	100
	100 [d]	100	100	100
	28.92 [e]	52.83	18.25	100

Note: likelihood ratio $\chi^2(2) = 11.6244$; p = 0.003; Cramer's V = 0.0545
Rows: frequency[a]; expected frequency[b]; row percentage[c]; column percentage[d]; cell percentage[e]

Table A19

Profile of Respondents Missing Data by Race/Ethnicity

Race/Ethnicity of Student	No missing	Low missing	High Missing	Total
Asian	68 [a]	114	60	242
	71.9 [b]	130.5	39.7	242
	28.1 [c]	47.11	24.79	100
	6.43 [d]	5.93	10.27	6.79
	1.91 [e]	3.2	1.68	6.79
Hispanic	99 [a]	268	79	446
	132.4 [b]	240.5	73.1	446
	22.2 [c]	60.09	17.71	100
	9.36 [d]	13.95	13.53	12.52
	2.78 [e]	7.52	2.22	12.52
Black	146 [a]	356	150	652
	193.6 [b]	351.5	106.9	652
	22.39 [c]	54.6	23.01	100
	13.8 [d]	18.53	25.68	18.3
	4.1 [e]	9.99	4.21	18.3
White	736 [a]	1,142	285	2,163
	642.3 [b]	1,166.20	354.5	2,163.00
	34.03 [c]	52.8	13.18	100
	69.57 [d]	59.45	48.8	60.71
	20.66 [e]	32.05	8	60.71
Native American	9 [a]	41	10	60
	17.8 [b]	32.3	9.8	60
	15 [c]	68.33	16.67	100
	0.85 [d]	2.13	1.71	1.68
	0.25 [e]	1.15	0.28	1.68
Total	1,058 [a]	1,921	584	3,563
	1,058.00 [b]	1,921.00	584	3,563.00
	29.69 [c]	53.92	16.39	100
	100 [d]	100	100	100
	29.69 [e]	53.92	16.39	100

Note: likelihood ratio $\chi^2(8) = 88.1107$; p = 0.000; Cramer's V = 0.1114

Rows: frequency[a]; expected frequency[b]; row percentage[c]; column percentage[d]; cell percentage[e]

Table A20

Profile of Respondents Missing Data by Social Class of Community

Social Class of Community	No missing	Low missing	High Missing	Total
Poor	61 [a]	114	51	226
	65.3 [b]	119.3	41.4	226
	26.99 [c]	50.44	22.57	100
	5.37 [d]	5.5	7.08	5.75
	1.55 [e]	2.9	1.3	5.75
Working-class	245 [a]	471	155	871
	251.7 [b]	459.7	159.7	871
	28.13 [c]	54.08	17.8	100
	21.59 [d]	22.72	21.53	22.17
	6.24 [e]	11.99	3.95	22.17
Middle-class	440 [a]	887	284	1,611
	465.5 [b]	850.2	295.3	1,611.00
	27.31 [c]	55.06	17.63	100
	38.77 [d]	42.79	39.44	41.01
	11.2 [e]	22.58	7.23	41.01
Upper middle-class	318 [a]	526	230	1,074
	310.3 [b]	566.8	196.9	1,074.00
	29.61 [c]	48.98	21.42	100
	28.02 [d]	25.37	31.94	27.34
	8.1 [e]	13.39	5.86	27.34
Upper-class	71 [a]	75	0	146
	42.2 [b]	77.1	26.8	146
	48.63 [c]	51.37	0	100
	6.26 [d]	3.62	0	3.72
	1.81 [e]	1.91	0	3.72
Total	1,135 [a]	2,073	720	3,928
	1,135.00 [b]	2,073.00	720	3,928.00
	28.9 [c]	52.77	18.33	100
	100 [d]	100	100	100
	28.9 [e]	52.77	18.33	100

Note: likelihood ratio $\chi^2(8) = 84.9699$; p = 0.000; Cramer's V = 0.0888

Rows: frequency[a]; expected frequency[b]; row percentage[c]; column percentage[d]; cell percentage[e]

Table A21

Profile of Respondents Missing Data by Grade

Grade	No missing	Low missing	High Missing	Total
Sixth	82 [a]	359	134	575
	166.1 [b]	303.5	105.4	575.0
	14.26 [c]	62.43	23.30	100.00
	7.22 [d]	17.32	18.61	14.64
	2.09 [e]	9.14	3.41	14.64
Eighth	238 [a]	566	125	929
	268.4 [b]	490.3	170.3	929.0
	25.62 [c]	60.93	13.46	100.00
	20.97 [d]	27.30	17.36	23.65
	6.06 [e]	14.41	3.18	23.65
Tenth	465 [a]	707	286	1,458
	421.3 [b]	769.5	267.3	1,458.0
	31.89 [c]	48.49	19.62	100.00
	40.97 [d]	34.11	39.72	37.12
	11.84 [e]	18.00	7.28	37.12
Eleventh	4 [a]	0	0	4
	1.2 [b]	2.1	0.7	4.0
	100.00 [c]	0.00	0.00	100.00
	0.35 [d]	0.00	0.00	0.10
	0.10 [e]	0.00	0.00	0.10
Twelfth	346 [a]	441	175	962
	278.0 [b]	507.7	176.3	962.0
	35.97 [c]	45.84	18.19	100.00
	30.48 [d]	21.27	24.31	24.49
	8.81 [e]	11.23	4.46	24.49
Total	1,135 [a]	2,073	720	3,928
	1,135.0 [b]	2,073.0	720.0	3,928.0
	28.90 [c]	52.77	18.33	100.00
	100.00 [d]	100.00	100.00	100.00
	28.90 [e]	52.77	18.33	100.00

Note: likelihood ratio $\chi^2(8) = 142.6641$; p = 0.000; Cramer's V = 0.1306

Rows: frequency[a]; expected frequency[b]; row percentage[c]; column percentage[d]; cell percentage[e]

Table A22
Data With and Without Multivariate Outliers by Gender

	Full Sample N= 3, 928			Outliers Removed N= 3,828		
	Frequency	Percent	Cumulative	Frequency	Percent	Cumulative
Male	1,762	44.9	44.9	1,713	44.8	44.8
Female	2,162	55.1	100	2,111	55.2	100
Total	3,924	100		3,824	100	

Table A23
Data With and Without Multivariate Outliers by Race/Ethnicity

	Full Sample N= 3, 928			Outliers Removed N= 3,828		
	Frequency	Percent	Cumulative	Frequency	Percent	Cumulative
Asian	242	6.79	6.79	236	6.8	6.8
Hispanic	446	12.52	19.31	437	12.58	19.38
Black	652	18.3	37.61	627	18.05	37.43
White	2,163	60.71	98.32	2,114	60.87	98.3
Native American	60	1.68	100	59	1.7	100
Total	3,563	100		3,473	100	

Table A24
Data With and Without Multivariate Outliers by Social Class

	Full Sample N= 3, 928			Outliers Removed N= 3,828		
	Frequency	Percent	Cumulative	Frequency	Percent	Cumulative
Poor	226	5.75	5.75	215	5.62	5.62
Working-class	871	22.17	27.93	848	22.15	27.77
Middle-class	1,611	41.01	68.94	1,563	40.83	68.6
Upper middle-class	1,074	27.34	96.28	1,059	27.66	96.26
Upper-class	146	3.72	100	143	3.74	100
Total	3,928	100		3,828	100	

Table A25

Data With and Without Multivariate Outliers by Grade

	Full Sample N= 3, 928			Outliers Removed N= 3,828		
Grade	Frequency	Percent	Cumulative	Frequency	Percent	Cumulative
Sixth	575	14.64	14.64	562	14.68	14.68
Eighth	929	23.65	38.29	897	23.43	38.11
Tenth	1,458	37.12	75.41	1,423	37.17	75.29
Eleventh	4	0.1	75.51	4	0.1	75.39
Twelfth	962	24.49	100	942	24.61	100
Total	3,928	100		3,928	100	

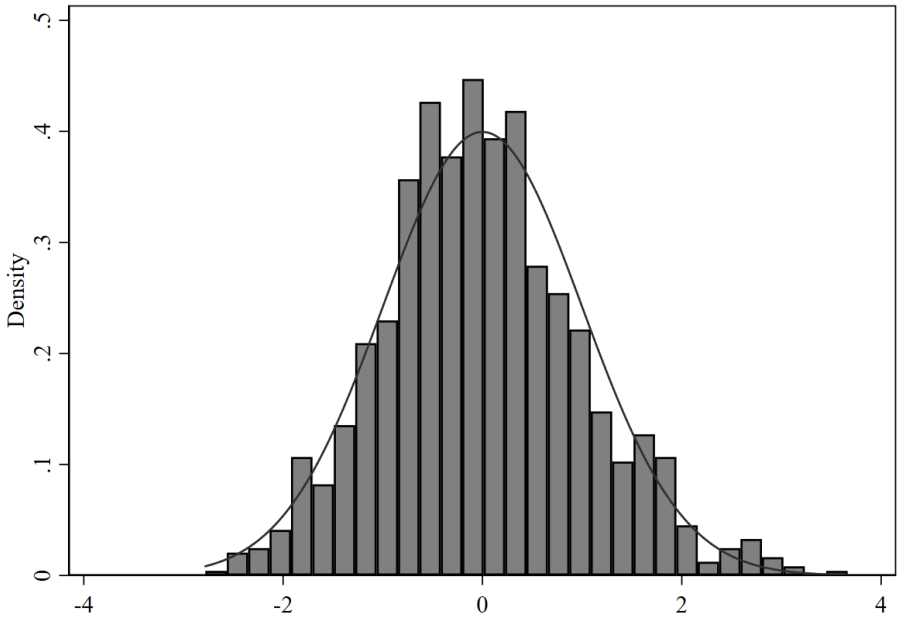

Figure A 1. Histogram of Standardized Residuals.

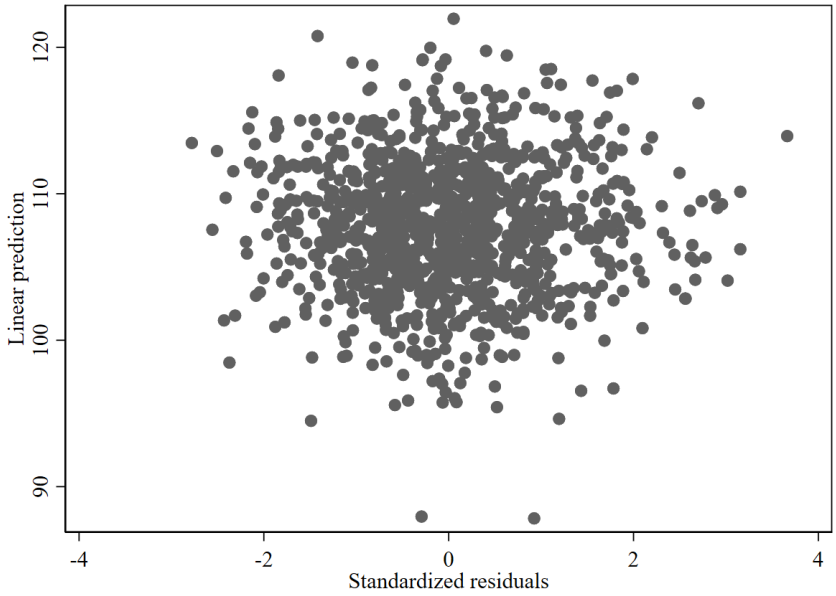

Figure A 2. Scatterplot of Standardized Residuals.

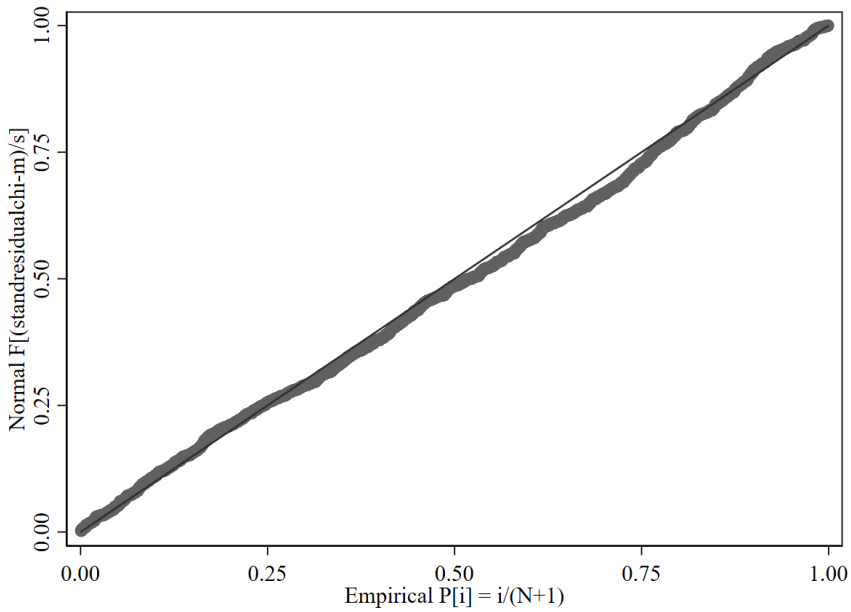

Figure A 3. P-P Plot of Standardized Residuals.

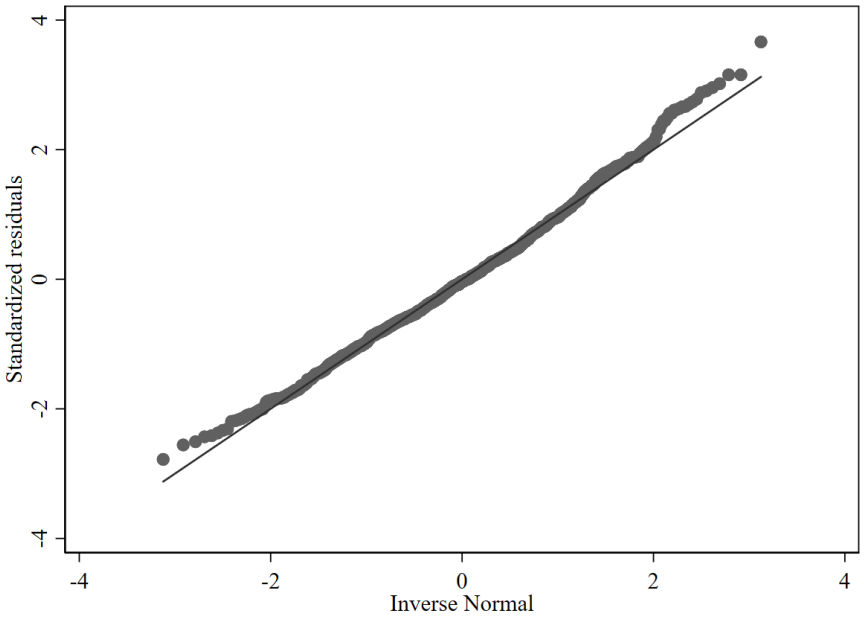

Figure A 4. Q-Q Plot of Standardized Residuals.

Appendix B

Table B1
Correlation Table: Expectations of Success

	grad_hs	college	job_pays	home	enjoy	happy	health	any	respect	friends	life	children
chances_grad_hs	1											
chances_college	0.6197	1										
chances_job_pays	0.45	0.4653	1									
chances_own_home	0.4148	0.4445	0.7405	1								
chances_job_enjoys	0.4075	0.3903	0.6248	0.6564	1							
chances_happy_family	0.3686	0.3175	0.5369	0.5646	0.6651	1						
chances_good_health	0.3387	0.2927	0.4977	0.4863	0.5514	0.6377	1					
chances_anywhere	0.2572	0.2834	0.4775	0.5182	0.5196	0.5188	0.5321	1				
chances_respected	0.2812	0.2561	0.5156	0.495	0.5299	0.5461	0.5391	0.5825	1			
chances_friends	0.4272	0.304	0.4403	0.4575	0.4984	0.5712	0.5378	0.4409	0.532	1		
chances_life_better	0.2529	0.2118	0.4147	0.4029	0.3937	0.3821	0.3561	0.4041	0.4199	0.4042	1	
chances_children_better	0.1771	0.1457	0.3318	0.3162	0.331	0.3723	0.3243	0.3312	0.3713	0.3317	0.667	1

Table B2
Correlation Table: Academic Effort

	tries_hard_math	tries_hard_English	tries_hard_history	tries_hard_science
tries_hard_math	1			
tries_hard_English	0.4607	1		
tries_hard_history	0.3288	0.374	1	
tries_hard_science	0.4318	0.3502	0.4107	1

Table B3
Correlation Table: Self Esteem

	feels_good	worth	do_things_well	satisfied	feels_useless	not_good	not_proud	empty
feels_good_self	1							
person_of_worth	0.5	1						
do_things_well	0.3951	0.5626	1					
satisfied_with_self	0.5786	0.5152	0.4366	1				
feels_useless	0.2873	0.2453	0.1964	0.2882	1			
feels_not_good	0.3162	0.3085	0.25	0.3296	0.6518	1		
not_proud	0.3117	0.3351	0.293	0.3765	0.4125	0.479	1	
emotionally_empty	0.3393	0.3393	0.2302	0.3598	0.4579	0.4968	0.5626	1

Table B4
Correlation Table: Locus of Control

	control	good_luck	somebody_stops	hardly_work	certain	chance
not_enough_control	1					
good_luck_more_imp	0.3028	1				
somebody_stops	0.3611	0.2965	1			
plans_hardly_work	0.3989	0.3318	0.5249	1		
certain_plans_work	0.2006	0.1052	0.1659	0.3346	1	
chance_luck_impt	0.2281	0.4748	0.3092	0.2887	0.0403	1

Table B5
Correlation Table: Behavioral Regulation

	times_late	times_cut	trouble	in_suspend	out_suspend	transferred	police_pickup	arrested
times_r_late	1							
times_r_cut	0.4281	1						
times_r_trouble	0.2357	0.2186	1					
times_r_in_suspended	0.1118	0.2327	0.4262	1				
times_r_out_suspended	0.1128	0.1924	0.4078	0.6063	1			
transferred_disciplinary	0.0553	0.1637	0.2389	0.5348	0.6188	1		
police_pickup	0.1157	0.2438	0.35	0.4847	0.5568	0.6876	1	
times_r_arrested	0.0821	0.1916	0.3075	0.4783	0.5531	0.7543	0.8163	1

Table B6
Correlation Table: Valued Future Goals

	success	marry	money	friendships	steady	help	opport	near	away	correct	children	leisure	away
work_success	1												
marry	0.2512	1											
money	0.2012	0.1691	1										
friendships	0.2502	0.3972	0.1338	1									
Steady work	0.4596	0.2903	0.2903	0.3634	1								
help	0.1732	0.1751	0.0106	0.2651	0.1921	1							
opportunity	0.2719	0.3802	0.2004	0.2338	0.3273	0.23	1						
near	0.0947	0.1647	0.1217	0.1484	0.1462	0.2745	0.2221	1					
away	-0.0674	-0.0175	0.1305	0.009	-0.0032	0.0276	0.0316	-0.0163	1				
correct	0.0867	0.0901	-0.0017	0.1448	0.076	0.3939	0.1383	0.23	0.1732	1			
children	0.1406	0.4934	0.1465	0.2488	0.1543	0.1736	0.2807	0.2064	0.0076	0.12	1		
leisure	0.2633	0.2777	0.1684	0.3102	0.2966	0.131	0.2089	0.0842	0.0273	0.1583	0.2608	1	
get_away	-0.048	-0.0255	0.1622	0.0105	0.0003	-0.0728	0.0246	-0.2215	0.3239	0.0184	0.0411	0.1508	1

Table B7

Correlation Table: Parent School Involvement

	attend_schl_meeting	called_tchr_counsel	attend_schl_event	volunteer_school
attend_schl_meeting	1			
called_tchr_counsel	0.3198	1		
attend_schl_event	0.4117	0.1902	1	
volunteer_school	0.4843	0.2688	0.4036	1

Table B8

Correlation Table: Parent Communication

	discussed_courses	discussed_activities	discussed_studies
discussed_courses	1		
discussed_activities	0.4826	1	
discussed_studies	0.4314	0.5087	1

Table B9

Correlation Table: Parent Supervision

	check	help	privileges	limit	chores	TV_ gaming	friends	friends	night	spending	free_ time	after_ school
check_homework	1											
help_homework	0.5366	1										
privileges	0.3812	0.3874	1									
limit_privileges	0.2836	0.1681	0.2939	1								
assign_chores	0.2031	0.1466	0.1465	0.2537	1							
TV_gaming	0.3108	0.2624	0.1681	0.2939	0.2286	1						
time_friends	0.2112	0.0927	0.1571	0.2992	0.2539	0.3382	1					
friends	0.2504	0.2209	0.1729	0.1144	0.1565	0.139	0.2085	1				
night	0.2127	0.143	0.1554	0.1411	0.2073	0.106	0.2752	0.4702	1			
spending	0.2681	0.1686	0.1787	0.1773	0.1566	0.1905	0.1934	0.377	0.3477	1		
free_time	0.2385	0.1757	0.148	0.1305	0.1683	0.1942	0.2354	0.4813	0.3871	0.5247	1	
after_school	0.2521	0.1829	0.157	0.1484	0.1878	0.1557	0.2652	0.4176	0.4723	0.3991	0.5052	1

Table B10

Correlation Table: Parent Autonomy Support

	stay_out	friends	classes	job	school	money	dating	sport	activity	college
stay_out	1									
friends	0.2785	1								
classes	0.203	0.3206	1							
job	0.2459	0.2604	0.3452	1						
leave_school	0.2776	0.2269	0.2102	0.2358	1					
spend_money	0.1681	0.3925	0.3326	0.2756	0.1992	1				
dating	0.3213	0.3456	0.2025	0.2377	0.2517	0.3062	1			
sport	0.1445	0.3537	0.34	0.2998	0.18	0.4067	0.3399	1		
activity	0.1649	0.3485	0.3843	0.3357	0.1902	0.3981	0.3111	0.729	1	
college	0.1605	0.1823	0.324	0.2837	0.3201	0.2537	0.1866	0.2935	0.3207	1

Table B11

Correlation Table: Academic Challenge

	challenged_math	challenged_English	challenged_history	challenged_science
challenged_math	1			
challenged_English	0.3218	1		
challenged_history	0.2618	0.3641	1	
challenged_science	0.3449	0.3007	0.3609	1

Table B12
Correlation Table: School Climate

	get_along	spirit	strict	fair	friendly	disrupt	put_down	not_safe	impede	misbehave
get_along	1									
school_spirit	0.3043	1								
strict_rules	0.0696	0.2175	1							
discipline_fair	0.327	0.2834	0.1148	1						
students_friendly	0.1611	0.2496	0.1709	0.2108	1					
students_disrupt	0.1259	-0.0459	-0.1078	0.0501	-0.1007	1				
put_r_down	0.0367	0.0115	-0.0595	0.01	0.0708	0.2009	1			
r_not_feel_safe	0.2304	0.1057	-0.0263	0.1516	0.1494	0.1395	0.276	1		
impede_learn	0.0834	-0.0163	-0.0926	0.0008	-0.0099	0.29	0.2347	0.3103	1	
misbehave	0.0713	0.0752	0.0016	0.1146	0.072	0.3034	0.2493	0.2631	0.3703	1

Table B13
Correlation Table: Student-Teacher Relationship

	teaching_good	teachers_interested	teachers_praise	teachers_put_r_down	teachers_listen
teaching_good	1				
teachers_interested	0.6322	1			
teachers_praise	0.4198	0.4957	1		
teachers_put_r_down	0.219	0.2453	0.2413	1	
teachers_listen	0.4688	0.5471	0.5035	0.3072	1

Table B14
Correlation Table: Peer-Shared Values (Academic)

	attendance_important	study_important	good_grades_important	finish_hs_impt	post_hs_educ_important
attendance_important	1				
study_important	0.6196	1			
good_grades_important	0.5738	0.6009	1		
finish_hs_impt	0.4958	0.4192	0.5092	1	
post_hs_educ_important	0.4739	0.4887	0.5332	0.5752	1

Table B15
Correlation Table: Peer-Shared Values (Social)

	popular_important	boy_girlfriend_important	party_important
popular_important	1		
boy_girlfriend_important	0.4289	1	
party_important	0.3327	0.4202	1

Appendix C

Table C1

Interim Model 1: Correlations Among Latent Variables In CFA

	Exp_succ	Self_esteem	Self_behreg
Exp_succ	1		
Self_esteem	0.352	1	
Self_behreg	0.077	0.138	1

Table C2

Interim Model 1: Correlations Among Observed Variables In SEM

	job_pays	home	enjoys	feels_good	satisfied	empty	transferred	pickup	arrested
chances_job_pays	1.000								
chances_own_home	0.731	1.000							
chances_job_enjoys	0.602	0.654	1.000						
feels_good_self	0.235	0.202	0.230	1.000					
satisfied_with_self	0.223	0.212	0.253	0.501	1.000				
emotionally_empty	0.214	0.220	0.247	0.575	0.505	1.000			
transferred_disciplinary	0.077	0.038	0.074	0.107	0.086	0.040	1.000		
police_pickup	0.086	0.038	0.088	0.102	0.083	0.050	0.709	1.000	
times_r_arrested	0.097	0.036	0.095	0.102	0.088	0.031	0.794	0.832	1.000
Female	-0.047	-0.071	0.013	-0.058	-0.068	-0.086	0.089	0.138	0.124
Asian	-0.044	-0.045	-0.084	-0.067	-0.033	-0.037	0.000	0.028	0.034
Hispanic	-0.052	-0.095	-0.038	-0.006	-0.014	-0.067	-0.100	-0.121	-0.091
Black	0.078	0.032	0.068	0.117	0.101	0.056	-0.042	-0.029	-0.039
Native American	-0.071	-0.034	-0.037	0.015	-0.014	-0.004	0.014	0.010	0.003
Poor	-0.020	-0.053	-0.006	0.056	-0.005	-0.001	-0.051	-0.100	-0.082
Working class	0.013	0.036	0.030	-0.027	-0.075	0.004	-0.046	-0.051	-0.057
Upper middle class	-0.049	-0.095	-0.089	-0.052	0.056	-0.004	0.054	0.053	0.071
Upper class	0.002	0.031	0.012	0.002	-0.017	0.053	0.030	0.014	0.033
Middle school	0.050	0.079	0.047	0.097	-0.020	0.033	0.004	0.011	-0.015

Table C2 (continued)
Interim Model 1: Correlations Among Observed Variables In SEM

	Female	Asian	Hispanic	Black	Native American	Poor	Working class	Upper middle class	Upper class	Middle school
Female	1.000									
Asian	-0.048	1.000								
Hispanic	-0.026	-0.090	1.000							
Black	0.092	-0.103	-0.143	1.000						
Native American	-0.012	-0.028	-0.039	-0.045	1.000					
Poor	-0.044	-0.063	0.348	0.133	-0.002	1.000				
Working class	-0.003	-0.068	-0.035	-0.167	-0.016	-0.128	1.000			
Upper middle class	-0.083	0.251	-0.108	-0.038	-0.038	-0.143	-0.306	1.000		
Upper class	0.025	-0.064	-0.071	-0.101	-0.028	-0.061	-0.131	-0.146	1.000	
Middle school	0.004	-0.125	0.052	0.036	0.007	-0.010	0.024	-0.196	0.083	1.000

Table C3
Interim Model 1: Levels of invariance

					Likelihood ratio test		
Level	Chi square (*df*)	*p-value*	RMSEA	CFI	Chi square difference (*df*)	*p-value*	Non-invariant parameters (Score test *p-value)*
Level 1: Configural	439.673 (168)	0.000	0.029	0.981	---	---	
Level 2: Measurement Loadings	455.060 (174)	0.000	0.029	0.980	15.39 (6)	.0174	R transferred for disciplinary reasons* (.0019) How many times R was arrested* (.0015)

Note. *Non-invariant measurement coefficients resulted in latent variable to be rejected from model

Table C4
Model 1: Correlations Among Latent Variables In CFA

	Exp_succ	Self_esteem
Exp_succ	1	
Self_esteem	0.352	1

Table C5
Model 1: Correlations Among Observed Variables In SEM

	job_pays	home	enjoys	feels_good	satisfied	empty
chances_job_pays	1.000					
chances_own_home	0.727	1.000				
chances_job_enjoys	0.602	0.654	1.000			
feels_good_self	0.231	0.203	0.230	1.000		
satisfied_with_self	0.210	0.211	0.248	0.494	1.000	
emotionally_empty	0.211	0.212	0.244	0.578	0.506	1.000
Female	-0.045	-0.073	0.012	-0.059	-0.069	-0.084
Asian	-0.044	-0.045	-0.086	-0.073	-0.031	-0.042
Hispanic	-0.049	-0.092	-0.034	0.005	-0.014	-0.059
Black	0.063	0.019	0.063	0.112	0.092	0.046
Native American	-0.069	-0.033	-0.036	0.015	-0.013	-0.003
Poor	-0.025	-0.059	-0.001	0.052	0.002	-0.001
Working class	0.008	0.032	0.025	-0.035	-0.078	-0.001
Upper middle class	-0.045	-0.093	-0.090	-0.054	0.054	-0.003
Upper class	0.005	0.033	0.012	0.003	-0.015	0.053
Middle school	0.049	0.071	0.049	0.098	-0.016	0.037

Table C5 (continued)

Model 1: Correlations Among Observed Variables In SEM

	Female	Asian	Hispanic	Black	Native American	Poor	Working class	Upper middle class	Upper class	Middle school
Female	1.000									
Asian	-0.049	1.000								
Hispanic	-0.029	-0.090	1.000							
Black	0.097	-0.105	-0.146	1.000						
Native American	-0.011	-0.028	-0.039	-0.045	1.000					
Poor	-0.035	-0.063	0.336	0.145	-0.002	1.000				
Working class	-0.010	-0.065	-0.038	-0.168	-0.017	-0.132	1.000			
Upper middle class	-0.084	0.248	-0.109	-0.038	-0.038	-0.144	-0.310	1.000		
Upper class	0.026	-0.063	-0.070	-0.102	-0.027	-0.061	-0.132	-0.144	1.000	
Middle school	0.001	-0.122	0.058	0.039	0.006	-0.007	0.026	-0.193	0.079	1.000

Table C6
Model 1: Levels of invariance

Level	Chi square (*df*)	*p-value*	RMSEA	CFI	Likelihood ratio test: Chi square difference (*df*)	Likelihood ratio test: *p-value*	Non-invariant parameters (Score test *p-value)*
Level 1					---	---	
Configural	257.052 (96)	0.000	0.030	0.975			None
Level 2							
Measurement Loadings	257.706 (100)	0.000	0.029	0.975	0.65(4)	0.957	None
Level 3							
Structural Loadings	262.346 (111)	0.000	0.027	0.976	4.64(11)	0.947	None
Level 4							R feels good about self
Measurement Error Variances	321.238 (117)	0.000	0.030	0.968	58.89(6)	0.000	*(0.000)*
Level 4							R feels s/he is a person of worth
Measurement Error Variances	294.017 (116)	0.000	0.029	0.972	31.67(5)	0.000	*(0.000)*
Level 4							On the whole R is satisfied with
Measurement Error Variances	273.317 (115)	0.000	0.027	0.975	10.97(4)	0.027	self *(0.001)*
Level 4							
Measurement Error Variances	262.785 (114)	0.000	0.026	0.977	0.44(3)	0.932	None
Level 5							e.Exp_succ *(0.076)*
Structural Error Variances	279.643 (115)	0.000	0.028	0.974	16.86(1)	0.000	
Level 5							
Structural Error Variances	262.785 (114)	0.000	0.026	0.977	0		Untestable*

Note. *Freed error term results in no chi square difference from Level 4; Level 5 is untestable for invariance

Table C7
Model 2: Correlations Among Latent Variables In CFA

	Exp_succ	Self_esteem	Parent_autsupp
Exp_succ	1		
Self_esteem	0.352	1	
Parent_autsupp	0.089	0.077	1

Table C8
Model 2: Correlations Among Observed Variables In SEM

	job_pays	home	enjoys	feels_good	satisfied	empty	sport	activity	classes
chances_job_pays	1.000								
chances_own_home	0.728	1.000							
chances_job_enjoys	0.602	0.648	1.000						
feels_good_self	0.230	0.200	0.223	1.000					
satisfied_with_self	0.212	0.210	0.244	0.488	1.000				
emotionally_empty	0.215	0.215	0.240	0.570	0.507	1.000			
who_decides_sport	0.052	0.046	0.088	0.048	0.043	0.018	1.000		
who_decides_activity	0.065	0.061	0.101	0.049	0.065	0.041	0.728	1.000	
who_decides_classes	0.033	0.014	0.022	0.005	0.027	-0.017	0.334	0.373	1.000
Female	-0.041	-0.073	0.013	-0.065	-0.067	-0.092	0.009	0.036	0.053
Asian	-0.037	-0.040	-0.081	-0.055	-0.026	-0.031	-0.090	-0.060	0.069
Hispanic	-0.050	-0.095	-0.037	-0.002	-0.020	-0.066	-0.058	-0.032	0.033
Black	0.064	0.022	0.063	0.114	0.097	0.046	-0.040	-0.024	0.047
Native American	-0.048	-0.005	-0.014	0.020	-0.010	-0.001	-0.016	-0.039	-0.035
Poor	-0.026	-0.061	-0.003	0.051	0.001	-0.002	-0.026	-0.040	0.021
Working class	0.010	0.035	0.035	-0.023	-0.075	0.012	-0.015	-0.007	-0.111
Upper middle class	-0.049	-0.093	-0.094	-0.059	0.057	-0.008	0.063	0.063	0.041
Upper class	0.002	0.031	0.009	-0.002	-0.019	0.047	0.055	0.009	-0.077
Middle school	0.050	0.070	0.050	0.095	-0.022	0.037	-0.221	-0.218	-0.186

Table C8 (continued)
Model 2: Correlations Among Observed Variables In SEM

	Female	Asian	Hispanic	Black	Native American	Poor	Working class	Upper middle class	Upper class	Middle school
Female	1.000									
Asian	-0.051	1.000								
Hispanic	-0.031	-0.089	1.000							
Black	0.095	-0.104	-0.146	1.000						
Native American	-0.023	-0.026	-0.037	-0.044	1.000					
Poor	-0.037	-0.063	0.340	0.145	0.000	1.000				
Working class	-0.005	-0.086	-0.037	-0.166	-0.011	-0.132	1.000			
Upper middle class	-0.083	0.262	-0.106	-0.048	-0.047	-0.145	-0.307	1.000		
Upper class	0.025	-0.062	-0.070	-0.102	-0.026	-0.062	-0.130	-0.144	1.000	
Middle school	0.001	-0.123	0.054	0.046	-0.010	-0.005	0.024	-0.192	0.081	1.000

Table C9
Model 2: Levels of invariance

Level	Chi square (*df*)	*p-value*	RMSEA	CFI	Likelihood ratio test: Chi square difference (*df*)	Likelihood ratio test: *p-value*	Non-invariant parameters (Score test *p-value)*
Level 1 Configural	257.052(96)	0.000	0.030	0.975	___	___	None
Level 2 Measurement Loadings	257.706(100)	0.000	0.029	0.975	0.65(4)	0.957	None
Level 3 Structural Loadings	262.346(111)	0.000	0.027	0.976	4.64(11)	0.947	None
Level 4 Measurement Error Variances	321.238(117)	0.000	0.030	0.968	58.89(6)	0.000	R feels good about self *(0.000)*
Level 4 Measurement Error Variances	294.017(116)	0.000	0.029	0.972	31.67(5)	0.000	R feels s/he is a person of worth *(0.000)*
Level 4 Measurement Error Variances	273.317(115)	0.000	0.027	0.975	10.97(4)	0.027	On the whole R is satisfied with self *(0.001)*
Level 4 Measurement Error Variances	262.785(114)	0.000	0.026	0.977	0.44(3)	0.932	None
Level 5 Structural Error Variances	279.643(115)	0.000	0.028	0.974	16.86(1)	0.000	e.Exp_succ *(0.076)*
Level 5 Structural Error Variances	262.785(114)	0.000	0.026	0.977	0	___	Untestable*

Note. *Freed error term results in no chi square difference from Level 4; Level 5 is untestable for invariance

Table C10
Model 3: Correlations Among Latent Variables In CFA

	Exp_succ	Self_esteem	School_sttchr
Exp_succ	1		
Self_esteem	0.346	1	
School_sttchr	0.197	0.297	1

Table C11
Model 3: Correlations Among Observed Variables In SEM

	job_pays	home	enjoys	feels_good	satisfied	empty	good	interested	listen
chances_job_pays	1.000								
chances_own_home	0.720	1.000							
chances_job_enjoys	0.598	0.653	1.000						
feels_good_self	0.221	0.186	0.223	1.000					
satisfied_with_self	0.208	0.210	0.249	0.503	1.000				
emotionally_empty	0.205	0.204	0.242	0.575	0.505	1.000			
teaching_good	0.123	0.119	0.143	0.181	0.164	0.218	1.000		
teachers_interested	0.128	0.127	0.145	0.155	0.179	0.182	0.629	1.000	
teachers_listen	0.122	0.128	0.151	0.180	0.165	0.183	0.450	0.543	1.000
Female	-0.041	-0.071	0.012	-0.065	-0.069	-0.088	-0.024	-0.055	-0.019
Asian	-0.034	-0.036	-0.076	-0.053	-0.025	-0.030	0.054	0.055	0.054
Hispanic	-0.058	-0.101	-0.039	-0.003	-0.019	-0.066	0.027	-0.007	-0.010
Black	0.070	0.024	0.062	0.124	0.101	0.058	-0.060	-0.071	-0.006
Native American	-0.049	-0.013	-0.014	0.018	-0.012	-0.002	-0.047	-0.035	-0.035
Poor	-0.019	-0.054	-0.006	0.059	-0.001	0.003	0.009	0.021	0.044
Working class	0.009	0.033	0.028	-0.024	-0.080	0.000	-0.039	-0.055	-0.052
Upper middle class	-0.048	-0.094	-0.093	-0.053	0.059	-0.001	0.051	0.065	0.011
Upper class	0.001	0.031	0.010	-0.001	-0.019	0.050	0.106	0.102	0.071
Middle school	0.053	0.072	0.047	0.096	-0.020	0.033	0.108	0.097	0.063

Table C11 (continued)
Model 3: Correlations Among Observed Variables In SEM

	Female	Asian	Hispanic	Black	Native American	Poor	Working class	Upper middle class	Upper class	Middle school
Female	1.000									
Asian	-0.049	1.000								
Hispanic	-0.024	-0.089	1.000							
Black	0.098	-0.103	-0.145	1.000						
Native American	-0.016	-0.027	-0.039	-0.045	1.000					
Poor	-0.040	-0.062	0.345	0.137	-0.001	1.000				
Working class	-0.001	-0.082	-0.041	-0.165	-0.015	-0.132	1.000			
Upper middle class	-0.087	0.255	-0.108	-0.039	-0.036	-0.145	-0.312	1.000		
Upper class	0.025	-0.063	-0.071	-0.102	-0.027	-0.062	-0.133	-0.146	1.000	
Middle school	-0.001	-0.121	0.059	0.044	0.000	-0.004	0.029	-0.193	0.088	1.000

Table C12
Model 3: Levels of invariance

Level	Chi square (*df*)	*p-value*	RMSEA	CFI	Likelihood ratio test: Chi-square difference (df)	Likelihood ratio test: *p-value*	Non-invariant parameters (Score test *p-value)*
Level 1 Configural	358.660 (168)	0.000	0.025	0.980	___	___	None
Level 2 Measurement Loadings	365.369 (174)	0.000	0.024	0.979	6.71(6)	0.3487	None
Level 3 Structural Loadings	385.256 (197)	0.000	0.023	0.980	19.89(23)	0.6487	None
Level 4 Measurement Error Variances	491.587 (206)	0.000	0.027	0.969	106.33(9)	0.000	The teaching is good at school *(0.000)*
Level 4 Measurement Error Variances	459.071 (205)	0.000	0.026	0.973	73.81(8)	0.000	R feels good about self *(0.000)*
Level 4 Measurement Error Variances	433.240 (204)	0.000	0.025	0.975	47.98(7)	0.000	R feels s/he is a person of worth *(0.000)*
Level 4 Measurement Error Variances	413.093 (203)	0.000	0.024	0.977	27.84(6)	0.0001	On the whole R is satisfied with self *(0.)*
Level 4 Measurement Error Variances	399.709 (202)	0.000	0.023	0.979	14.45(5)	0.0130	Teachers really listen *(0.)*
Level 4 Measurement Error Variances	387.793 (201)	0.000	0.022	0.980	2.54(4)	0.6381	None
Level 5 Structural Error Variances	415.275 (203)	0.000	0.024	0.977	27.48(2)	0.000	e.Exp_succ *(0.0000)*
Level 5 Structural Error Variances	394.699(202)	0.000	0.023	0.979	6.91(1)	0.0086	e.Self_esteem *(0.0079)*
Level 5 Structural Error Variances	387.793(201)	0.000	0.022	0.980	0	___	Untestable*

Note. *Freed error term resulted in no chi square difference from Level 4; Level 5 is untestable for invariance

Table C13
CFA Model 4. Correlations Among Latent Variables in CFA

	Exp_succ	Self_esteem	Peers_values
Exp_succ	1		
Self_esteem	0.354	1	
Peers_values	0.276	0.268	1

Table C14
Model 4: Correlations Among Observed Variables In SEM

	job_pays	home	enjoys	feels_good	satisfied	empty	attendance	study	grades
chances_job_pays	1.000								
chances_own_home	0.726	1.000							
chances_job_enjoys	0.604	0.649	1.000						
feels_good_self	0.221	0.192	0.222	1.000					
satisfied_with_self	0.214	0.208	0.241	0.498	1.000				
emotionally_empty	0.207	0.206	0.236	0.576	0.503	1.000			
attendance_important	0.197	0.162	0.186	0.177	0.155	0.150	1.000		
study_important	0.191	0.178	0.203	0.115	0.155	0.123	0.608	1.000	
good_grades_important	0.207	0.189	0.188	0.169	0.148	0.120	0.556	0.599	1.000
Female	-0.053	-0.078	0.010	-0.062	-0.065	-0.086	0.121	0.104	0.066
Asian	-0.032	-0.037	-0.075	-0.057	-0.029	-0.034	0.007	0.066	0.032
Hispanic	-0.044	-0.095	-0.037	0.004	-0.018	-0.061	0.010	0.008	0.038
Black	0.062	0.017	0.060	0.112	0.095	0.045	0.079	0.053	0.078
Native American	-0.071	-0.034	-0.037	0.015	-0.013	-0.003	0.001	0.010	-0.011
Poor	-0.027	-0.061	-0.002	0.057	0.003	0.004	-0.008	0.013	0.039
Working class	0.008	0.034	0.026	-0.032	-0.077	0.002	-0.034	-0.048	-0.005
Upper middle class	-0.048	-0.095	-0.094	-0.057	0.052	-0.005	-0.089	0.001	-0.113
Upper class	0.002	0.031	0.006	0.001	-0.016	0.049	0.011	0.034	0.003
Middle school	0.064	0.083	0.062	0.104	-0.014	0.039	0.130	0.117	0.154

Table C14 (continued)
Model 4: Correlations Among Observed Variables In SEM

	Female	Asian	Hispanic	Black	Native American	Poor	Working class	Upper middle class	Upper class	Middle school
Female	1.000									
Asian	-0.047	1.000								
Hispanic	-0.029	-0.088	1.000							
Black	0.098	-0.104	-0.145	1.000						
Native American	-0.011	-0.028	-0.039	-0.046	1.000					
Poor	-0.038	-0.062	0.343	0.147	-0.002	1.000				
Working class	-0.007	-0.069	-0.035	-0.172	-0.017	-0.132	1.000			
Upper middle class	-0.081	0.257	-0.107	-0.038	-0.038	-0.144	-0.311	1.000		
Upper class	0.019	-0.061	-0.068	-0.101	-0.027	-0.060	-0.130	-0.143	1.000	
Middle school	0.007	-0.133	0.057	0.040	0.008	-0.001	0.026	-0.195	0.079	1.000

Table C15
Model 4: Levels of invariance

Level	Chi square (*df*)	*p-value*	RMSEA	CFI	Likelihood ratio test: Chi-square difference (*df*)	Likelihood ratio test: *p-value*	Non-invariant parameters (Score test *p-value)*
Level 1: Configural	449.669(168)	0.000	0.030	0.971	---	---	None
Level 2: Measurement Loadings	451.121(174)	0.000	0.029	0.971	1.45(6)	0.9626	None
Level 3: Structural Loadings	469.153(197)	0.000	0.027	0.972	18.03(23)	0.7551	None
Level 4: Measurement Error Variances	538.867(206)	0.000	0.029	0.956	69.71(9)	0.000	R feels good about self *(0.000)*
Level 4: Measurement Error Variances	513.132(205)	0.000	0.028	0.968	43.98(8)	0.000	R feels s/he is a person of worth *(0.000)*
Level 4: Measurement Error Variances	492.798(204)	0.000	0.028	0.970	23.65(7)	0.000	On the whole R is satisfied with self *(0.0009)*
Level 4: Measurement Error Variances	482.219(203)	0.000	0.027	0.971	13.07(6)	0.0420	Among friends, how important to study *(0.0010)*
Level 4 Measurement Error Variances	471.774(202)	0.000	0.027	0.972	2.62(5)	0.7582	None
Level 5 Structural Error Variances	497.035(204)	0.000	0.028	0.970	25.26(2)	0.000	e.Exp_succ *(0.0000)*
Level 5 Structural Error Variances	478.302(202)	0.000	0.027	0.971	6.53(1)	0.0106	e.Self_esteem*(0.0099)*
Level 5 Structural Error Variances	471.774(202)	0.000	0.027	0.972	0	---	Untestable*

Note. *Freed error term resulted in no chi square difference from Level 4; Level 5 is untestable for invariance

Table C16
Model 5. Correlations Among Latent Variables

	Exp_succ	Self_esteem	Parent_aut~p	School_stt~r	Peers_values
Exp_succ	1				
Self_esteem	0.348	1			
Parent_aut~p	0.071	0.003	1		
School_stt~r	0.190	0.092	0.004	1	
Peers_values	0.266	0.071	0.012	0.089	1

Table C17
Model 5: Correlations Among Observed Variables In SEM

	job_pays	home	enjoys	feels_good	satisfied	empty
chances_job_pays	1.000					
chances_own_home	0.724	1.000				
chances_job_enjoys	0.605	0.647	1.000			
feels_good_self	0.217	0.179	0.216	1.000		
satisfied_with_self	0.215	0.205	0.237	0.501	1.000	
emotionally_empty	0.211	0.207	0.236	0.575	0.504	1.000
who_decides_sport	0.033	0.025	0.071	0.031	0.029	0.005
who_decides_activity	0.040	0.031	0.084	0.026	0.051	0.025
who_decides_classes	0.021	-0.005	0.008	-0.010	0.017	-0.021
teaching_good	0.127	0.118	0.139	0.177	0.164	0.215
teachers_interested	0.123	0.120	0.136	0.153	0.175	0.183
teachers_listen	0.113	0.120	0.141	0.181	0.162	0.178
attendance_important	0.191	0.148	0.179	0.164	0.157	0.142
study_important	0.190	0.177	0.200	0.121	0.158	0.115
good_grades_important	0.204	0.183	0.179	0.176	0.152	0.120
Female	-0.043	-0.074	0.010	-0.071	-0.067	-0.095
Asian	-0.025	-0.031	-0.069	-0.045	-0.023	-0.030
Hispanic	-0.050	-0.103	-0.043	-0.006	-0.026	-0.072
Black	0.071	0.027	0.060	0.121	0.102	0.053
Native American	-0.051	-0.006	-0.014	0.021	-0.010	-0.001
Poor	-0.021	-0.057	-0.007	0.065	0.000	0.008
Working class	0.006	0.034	0.035	-0.021	-0.075	0.009
Upper middle class	-0.051	-0.093	-0.098	-0.059	0.058	-0.006
Upper class	-0.002	0.029	0.005	-0.003	-0.020	0.043
Middle school	0.065	0.080	0.056	0.097	-0.020	0.033

Table C17 (continued)
Model 5: Correlations Among Observed Variables In SEM

	sport	activity	classes	good	interested	listen	attendance	study	grades
who_decides_sport	1.000								
who_decides_activity	0.733	1.000							
who_decides_classes	0.323	0.358	1.000						
teaching_good	-0.063	-0.014	-0.084	1.000					
teachers_interested	-0.030	-0.035	-0.091	0.627	1.000				
teachers_listen	-0.034	-0.011	-0.074	0.450	0.543	1.000			
attendance_important	-0.072	-0.044	-0.060	0.172	0.168	0.163	1.000		
study_important	-0.105	-0.065	-0.076	0.192	0.172	0.216	0.608	1.000	
good_grades_important	-0.096	-0.060	-0.049	0.116	0.135	0.146	0.559	0.592	1.000
Female	0.005	0.035	0.052	-0.027	-0.055	-0.015	0.120	0.103	0.069
Asian	-0.085	-0.056	0.076	0.065	0.064	0.061	0.016	0.065	0.033
Hispanic	-0.060	-0.033	0.028	0.020	-0.011	-0.013	0.002	0.004	0.039
Black	-0.044	-0.022	0.045	-0.059	-0.068	-0.006	0.084	0.053	0.079
Native American	-0.018	-0.042	-0.037	-0.049	-0.037	-0.038	0.001	0.007	-0.012
Poor	-0.031	-0.042	0.014	0.011	0.023	0.045	-0.005	0.012	0.035
Working class	-0.018	-0.012	-0.113	-0.033	-0.054	-0.051	-0.025	-0.051	-0.011
Upper middle class	0.060	0.066	0.042	0.053	0.068	0.012	-0.091	0.007	-0.107
Upper class	0.050	0.000	-0.082	0.102	0.097	0.075	0.005	0.028	-0.002
Middle school	-0.214	-0.207	-0.176	0.100	0.095	0.070	0.138	0.125	0.157

Table C17 (continued)
Model 5: Correlations Among Observed Variables In SEM

	Female	Asian	Hispanic	Black	Native American	Poor	Working class	Upper middle class	Upper class	Middle school
Female	1.000									
Asian	-0.053	1.000								
Hispanic	-0.029	-0.089	1.000							
Black	0.099	-0.103	-0.145	1.000						
Native American	-0.023	-0.027	-0.038	-0.044	1.000					
Poor	-0.045	-0.063	0.355	0.139	0.000	1.000				
Working class	0.004	-0.086	-0.034	-0.169	-0.012	-0.133	1.000			
Upper middle class	-0.082	0.268	-0.104	-0.045	-0.048	-0.146	-0.312	1.000		
Upper class	0.020	-0.062	-0.069	-0.102	-0.026	-0.062	-0.131	-0.144	1.000	
Middle school	0.000	-0.127	0.058	0.049	-0.007	0.002	0.027	-0.192	0.085	1.000

Table C18
Model 5: Levels of invariance

Level	Chi square (*df*)	*p-value*	RMSEA	CFI	Likelihood ratio test: Chi-square difference (*df*)	Likelihood ratio test: *p-value*	Non-invariant parameters (Score test *p-value)*
Level 1					---	---	
Configural	897.627 (360)	0.000	0.029	0.967			None
Level 2							
Measurement Loadings	908.343 (370)	0.000	0.028	0.967	10.72(10)	0.3800	None
Level 3							
Structural Loadings	932.415(397)	0.000	0.027	0.967	24.07(27)	0.6263	None
Level 4							The teaching is good at school
Measurement Error Variances	1059.286 (412)	0.000	0.029	0.960	126.87(15)	0.000	*(0.000)*
Level 4							R feels good about self
Measurement Error Variances	1025.329 (411)	0.000	0.029	0.962	92.91(14)	0.000	*(0.000)*
Level 4							R feels s/he is a person of
Measurement Error Variances	999.172(410)	0.000	0.028	0.963	66.76(13)	0.000	worth *(0.000)*
Level 4							Teachers really listen
Measurement Error Variances	980.364(409)	0.000	0.028	0.964	47.95(12)	0.000	*(0.002)*
Level 4							On the whole R is satisfied
Measurement Error Variances	966.993(400)	0.000	0.027	0.965	137.51(11)	0.0001	with self *(0.001)*
Level 4							Among friends, how important
Measurement Error Variances	956.541(407)	0.000	0.027	0.966	24.13(10)	0.0073	to study *(0.002)*
Level 4							
Measurement Error Variances	947.384(406)	0.000	0.027	0.966	14.97(9)	0.0918	None
Level 5							e.Exp_succ *(0.0000)*
Structural Error Variances	975.893(408)	0.000	0.028	0.965	28.51(2)	0.000	
Level 5							e.Self_esteem *(0.0079)*
Structural Error Variances	953.677(407)	0.000	0.027	0.966	6.29(1)	0.0121	
Level 5							
Structural Error Variances	947.384(406)	0.000	0.027	0.966	0	---	Untestable*

Note. *Freed error term resulted in no chi square difference from Level 4; Level 5 is untestable for invariance