A STRUCTURAL EQUATION MODEL OF RESILIENCY IN ADOLESCENCE

by

Sarah A. Gillis

A Dissertation Submitted in

Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

in Educational Psychology

at

The University of Wisconsin-Milwaukee

August 2011

ABSTRACT

A STRUCTURAL EQUATION MODEL OF RESILIENCY IN ADOLESCENCE

by

Sarah A. Gillis

The University of Wisconsin-Milwaukee, 2011
Under the Supervision of Azara Santiago-Rivera, Ph.D.

This study proposed a model of resiliency constructs that could best predict important adolescent outcomes. Using path analytic techniques it sought to explain the relationships between constructs from three distinct literature bases: social-cognitive theory, self-determination theory, and diathesis stress models. Participants were 4,922 ethnically diverse youth from across the nation. Measures looked at the following constructs: relatedness, autonomous motivation, controlled motivation, academic self-efficacy, stress, distress, and value of education. Exploratory and confirmatory factor analyses were utilized to evaluate the psychometric properties for each of the instruments. Following, construct validity was assessed to explore convergent and discriminant validity. Finally, structural equation modeling was utilized to assess the fit of three hypothesized models. The model found to best explain the hypothesized relationships indicated fair to good fit. Results indicated that students who had stronger relationships with their peers, teachers, and family had higher levels of autonomous motivation and lower levels of controlled motivation. Further, students high in autonomous motivation also valued school more highly and had higher academic self-efficacy. Higher levels of academic self-efficacy then significantly predicted higher value of education and lower levels of stress. Controlled motivation was unable to predict value of education and was also unable to predict academic self-efficacy. However, it was able to significantly predict higher levels of distress. Higher stress levels were then found to result in higher levels of distress in students. Distress also significantly predicted value of education, though not in the hypothesized direction. Finally, relatedness was shown to serve as a buffer for the relationship of stress on distress. Implications for practice, as well as limitations and strengths are discussed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

Introduction

The state of the American education system and the imbalance of resources have long been documented. Kantor and Brenzel (1992) shed light on this issue when they point out how racial segregation and economic inequalities have "intensified the barriers to educational success facing low-income and minority students" (p. 280). Also, they note that students in the urban education system are often not being given the same opportunities as their suburban counterparts. They are more likely to receive irrelevant, fragmented instruction and are often faced with disciplinary policies that are rigid and unjust.

Statistics clearly show the results of a these longstanding inequalities in education. On national assessments, Black students continue to perform below their White counterparts on reading, writing, science and mathematics (National Center for Educational Statistics, 2002). Additionally, dropout rates for Hispanic students continue to surpass the national average. For example, compared to the 2007 national average of 3.5%, the dropout rate for Black and Hispanic students was 4.5% and 6%, respectively. Moreover, dropping out of school can have major implications for youth. For example, while the median income for an adult earning their high school diploma was $40,000 in 2007, a person without a high school diploma earned only $24,000. (National Center for Educational Statistics, 2009). Additionally, a high school dropout is less likely to enter the labor force when compared to a person who has received a high school diploma, and is twice as likely to be unemployed (U.S. Department of Labor, 2007). Although the outlook for these youth seems dismal, the research suggests there is some light in an otherwise very dark tunnel. Research on resiliency offers great promise for use with youth who experience disadvantage and adversity. Because resiliency rejects the notion of a deficit model, it is able to overturn some of these negative assumptions that the educational system makes of youth. Instead, it characterizes them by their "good outcomes in spite of serious threats to adaptation or development" (Masten, 2001, p. 228).   Studies looking at resiliency factors have found that youth who face adversity but have resiliency characteristics do not differ from their fellow competent peers in relation to psychological well-being and intellectual functioning (Masten, Hubbard, Gest, Tellegen, Garmezy & Ramirez, 1999). Additionally, they differ dramatically from their maladaptive peer counterparts in regard to current resources and psychological well-being. Taken together, these results suggest that students who are resilient do not possess some unknown or unique qualities but instead have successfully gained the relational/psychological resources that are necessary to make all youth successful (Masten & Coatsworth, 1998).

Nevertheless, researchers continue to focus their efforts primarily on solving the issues of "at risk" youth in this country. Furthermore, they choose to habitually define "at risk" youth as those individuals who are most likely to drop out of the educational system. Gross and Capuzzi (2008), however, have expanded the definition of "at risk" to instead refer to "a set of causal/effect (behavioral) dynamics that have the potential to place the individual in danger of a negative future event" (p. 6). In viewing risk in this way, these researchers have been able to broaden our "typical" understanding or definition of "at risk." In addition to the issue of dropout rates, they also choose to focus our attention to other outcomes such as youth who have limited

direction for life, or no appreciation for oneself or one's place in the world. In this way, Gross and Capuzzi (2008) do not focus on one specific target population or age, but instead on the need for preventative/intervention efforts for all youth.

Like Gross and Capuzzi (2008), this study proposes that it is important to work from both a preventative and crisis-management perspective. This perspective has enjoyed a long history in working to effectively ward off psychological problems and reduce human distress (Romano & Hage, 2000). While Counseling Psychology has historically supported these efforts, research shows that prevention is no longer a major commitment within the profession (O'Byrne, Brammer, Davidson & Poston, 2002). However, like the aforementioned researchers, we must again redirect our efforts to both the prevention and eradication of negative outcomes for youth. This is best accomplished by both focusing on characteristics that enhance students' resiliency while also attempting to stop problem behaviors from developing.

Resiliency research offers us the opportunity to combine efforts from both preventative and skill-building approaches. While some may argue that resiliency research has not offered enough direction on how to do this (Gross and Capuzzi, 2008) others have stated that the two areas are closely linked and work to enhance one another (Blum, 1998). Blum (1998) explains how knowledge of at-risk groups and the factors that buffer their risk can be helpful in developing programs that are both preventative and enhance students' resiliency. Moreover, each of these bodies of research offers us clues on working towards building and strengthening characteristics that every youth must have in order to be successful.

For this reason, a sound model of resiliency factors must be created to best depict how youth's distress levels and value for education can be improved. In addition, we must also understand how the relevance of a student's education can be increased, thus ensuring more students will stay the course in high school and college. While previous studies by both Close and Solberg (2008) and Solberg, Carlstrom, Howard and Jones (2007) have begun this process, it is argued that they are each missing a part of the overall explanation. Instead, it is proposed that a model based on resiliency characteristics from the following three theories might best explain resiliency in youth: Self-determination theory, Social cognitive theory and Diathesis-stress models. A brief overview of each theory, along with definitions of key terms for this study, are provided.

<div align="center">Self-determination Theory</div>

Motivation. Self-determination theory, as developed by Deci and Ryan (1987) offers information regarding the construct of student motivation. However, unlike many other theories of motivation that have viewed it as a unitary construct, self-determination theory posits that two different types of motivation exist, labeled autonomous and controlled motivation. Self-determination theory views these two types of motivation as distinct, they are not considered additive or resulting in a 'total motivation' construct. More specifically, autonomous motivation concerns behaviors that are ruled by volition or choice while controlled motivation involves engagement in actions due to experiences of pressure from forces outside of oneself (Deci & Ryan, 2008).

Research describing motivation with ethnically and socioeconomically diverse students has found that students who engage in more intrinsic or autonomous forms of motivation have better academic and well-being outcomes (Walls & Little, 2005). In addition, a student's reasons for taking part in activities were shown to work in combination with their beliefs regarding their ability to exert control over these activities. More specifically, when student's placed faith in their own efforts, their motivational style was able to exert greater effects on their school well-being, and grades.

Relatedness. Relatedness involves the quality of relationships and support a student feels they have with their teachers, peers and family (Deci & Ryan, 1987). It is a construct that has arisen out of the self-determination literature as being related to the constructs of autonomous and controlled motivation. Patrick, Ryan and Kaplan (2007) found evidence for this relationship when they created a structural equation model to look at the impact of relatedness on personal motivational beliefs, engagement in the classroom and achievement. Not only did they find support from teachers and peers led directly to more engagement within the classroom, but the relationship was also mediated by personal motivational beliefs.

Social-cognitive Theory

Academic Self-efficacy. According to social cognitive theory, as developed by Bandura (1997), all human beings have the ability to "exercise influence over what they do" (p. 3). By maintaining this human agency people are also able to develop beliefs regarding their personal efficacy. These beliefs, which Bandura calls self-efficacy beliefs, refer to the judgments people make about their ability to organize and take action on a specific domain of their lives. Put more simply, self-efficacy beliefs are the confidence that a person has regarding his/her ability to perform a specific task. Social cognitive theory focuses on the personal role that a person plays in promoting their own success or failure outcomes, as well as the influence of the environment to either support or change these. Furthermore, it asserts that self-efficacy should not be considered a general construct but instead should be measured in a domain specific way.

Diathesis-stress Models

Stress. Stress has been defined in many different ways by many different researchers. However, in an effort to present the most traditional definition of stress the reader is referred to the classic definition by Selye (1963) that states *stress* is "those factors that interfere with the system's physiological and psychological homeostasis" (p. 33). This definition is shared both for its all-encompassing and simplistic nature. Second, it is also important to define the term *diathesis* which Ingram and Luxton (2005) use interchangeably with the term vulnerability and conceptualize as "a predispositional factor, or set of factors, that makes possible a disordered state" (p. 34). Thus, diathesis can refer not only to genetic or biological factors but also to psychological ones, such as cognitive or interpersonal variables (Monroe & Simmons, 1991). In addition, Ingram and Luxton (2005) also suggest that because a diathesis is trait-like, it tends to be fairly stable. This does not mean, however, that a diathesis is permanent but rather that it is more likely to be resistant to change.

Ingram and Luxton (2005) also describe stress and vulnerability as existing on a continuum. Stress can be viewed as a range, from low to extreme, while vulnerability can be seen as a range from vulnerable to resilient. Therefore, at the extreme end of vulnerability, little stress is needed to trigger disorder while at the resilient end an extreme amount of stress must exist before psychopathology will develop.

Outcome Variables

Distress

Distress is defined as the amount of psychological and physical symptoms that are present in a student's life (Close & Solberg, 2008). It has received a great deal of recognition as a construct in both the health and depression literatures. Furthermore, like the commonly used Beck Depression Inventory-II (BDI-II; Beck, Steer & Brown, 1996) and Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982), distress will be measured by including items that tap into multiple domains that are common to youth. However, unlike the BDI, which is a diagnostic tool, this study will not measure severity of depression but instead one's overall distress level.

Value of Education

Value of Education is a construct that has received little attention in the literature. However, it warrants our consideration as a construct that may be valuable in tapping into the educational aspirations of students. Value of education concerns the importance that youth place on receiving a high school and college education. Data clearly shows that the socioeconomic implications for not completing a high school and college education are great (National Center for Educational Statistics, 2009). Furthermore, while dropout rates continue to remain a major concern for high schools due to the No Child Left Behind Act, studies continue to struggle with the correct way in which to measure this construct. While previous studies have chosen to look at retention as an outcome, the ways in which they do this vary so greatly that few implications can be drawn across studies. Furthermore, by including outcome variables that are difficult to measure (drop-out rates) and must often be collected at a much later date, these studies run the risk of loosing participants due to retention issues.

Additionally, adolescent populations can be very difficult to study over time due to difficulties with receiving permission from multiple school systems/parents. This leads to the inability to make generalizations of research findings across adolescent populations. Therefore, for the reasons listed above, distress and value of education will be utilized as the outcome variables for this study.

Purpose of the Study

The purpose of this study is to show that the relationships among constructs from self-determination theory, social cognitive theory, and diathesis-stress models offer important implications for youth interventions. While previous models (Solberg et al., 2007; Close & Solberg, 2008) have attempted to combine these theories in ways that describe the relationships among these variables (Close & Solberg, 2008; Solberg et al., 2007), they have each been lacking in their own way. For example, a model proposed by Close and Solberg (2008) found a good fit for the relationship between variables from self-determination theory and social cognitive theory. In their study, Close and Solberg (2008) found that relatedness predicted

autonomous motivation, though it did not have a significantly negative relationship on controlled motivation. Additionally, they found that controlled motivation positively predicted distress (or lack of well-being) and had a negative effect on achievement. Furthermore, although they predicted autonomous motivation would have a direct effect on distress, they instead found that this relationship was fully mediated through self-efficacy. In addition, while controlled motivation was not found to have a negative relationship with self-efficacy, self-efficacy was found to have a positive relationship on achievement. Finally, higher levels of distress in their model were found to negatively predict achievement, while high levels of achievement and low levels of distress led to retention of students in school.

A second study by Solberg et al. (2007) attempted to integrate the concept of stress into the discussion by creating profiles aimed at understanding the difference between various levels of "at risk" youth. While this study added important information to the literature on resiliency it received only mixed support for its hypothesis that students with higher levels of individual and relational protective factors (i.e. self-efficacy, motivation, relational support) would also have better academic and psychosocial outcomes.

Significance of this Study

While both of these previous studies contributed to the literature in their own way, they each lacked generalizeability as they were conducted with groups of predominantly Latino high school students. Furthermore, while Close and Solberg (2008) began to study the relationships between several resiliency constructs they failed to incorporate the critical role of stress and its impact on student distress. Therefore, it is proposed that a new structural model, which utilizes constructs from both studies and expands upon current conceptualizations of the three theoretical models, should be designed. First, using self-determination theory this study will reexamine the role of relatedness and its relationship with both autonomous and controlled motivation. In addition, the construct of relatedness will be expanded to include teacher, family and peer relationships. Furthermore, the role of relatedness in moderating the impact of stress on students' distress level will be explored. Social cognitive theory will then be utilized for its work regarding the role of self-efficacy on stress, distress and value of education. Finally, a diathesis-stress model will be included to introduce the construct of stress into the new model that was missing in the study by Close and Solberg (2008). It will also offer an expansion in the understanding of stress by considering the relationship it may have to overall health concerns or distress level. By creating a structural model that combines these resiliency constructs we are likely to gain deeper insight into the areas where intervention will be most helpful to decrease students' overall distress and increase their value of education.

Hypotheses

Based on the literature combining constructs from self-determination theory, social-cognitive theory and diathesis-stress models, the structural models in Figures 1-3 are proposed. First, a model based on previous research by Close and Solberg (2008) will be tested to look at the relationships among constructs from social-cognitive theory and self-determination theory. Model 1 hypothesizes that students who feel stronger relational ties with their school, peers and family (relatedness) will be report higher levels of autonomous motivation and lower levels of

controlled motivation (paths 1 and 2). Also, it is believed that students who have higher autonomous motivation will endorse higher ratings of the value of education (path 3) and will have higher self-efficacy beliefs (path 4). Furthermore, because Close and Solberg (2008) found the construct of academic self-efficacy to mediate the relationship between autonomous motivation and distress, a direct path will be placed in model 1 to determine whether this mediation can be shown with a larger, more diverse sample (path 5). Next, students who report high self-efficacy beliefs are also expected to have lower levels of distress (path 6) and higher endorsement on the value of school (path 7). Controlled motivation is then hypothesized to result in lower levels of self-efficacy (path 8), higher levels of distress (path 9) and lower value placed on schooling (path 10). Finally, students lower in distress are expected to endorse their value of education more highly (path 11).

A second model is then hypothesized which includes all constructs from the first model but also adds the important construct of stress to the resiliency model. Therefore, Model 2 includes the addition of paths from self-efficacy to stress (path 12) and from stress to distress (path 13). It is hypothesized that students with higher levels of self-efficacy will have lower levels of stress and distress. Furthermore, students with higher levels of stress are also expected to have greater levels of distress.

Finally, a third model will be run which hypothesizes that relatedness serves as a moderator between stress and wellbeing. It is expected that this model will be the best fit for the data and illustrate the most complete picture of the relationships between the important resiliency constructs from self-determination, social-cognitive, and diathesis stress theories.

Figure 1. Hypothesized Model 1
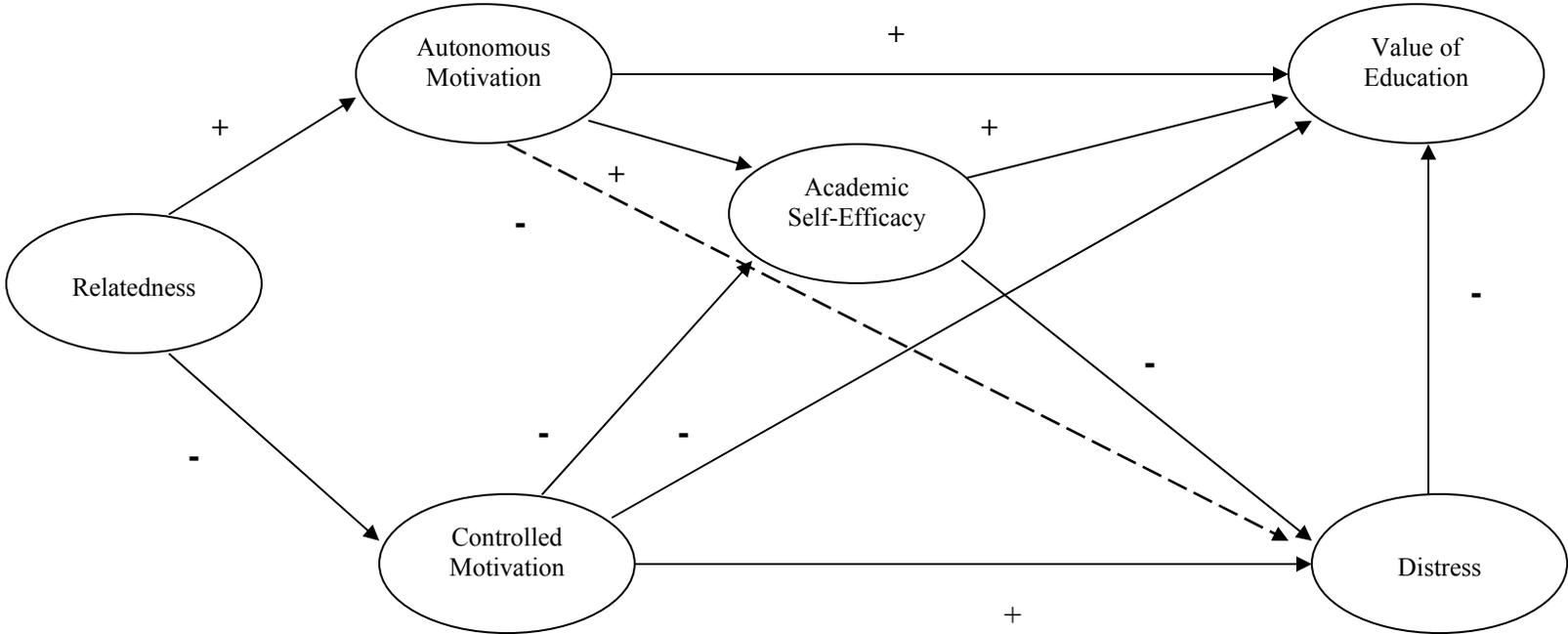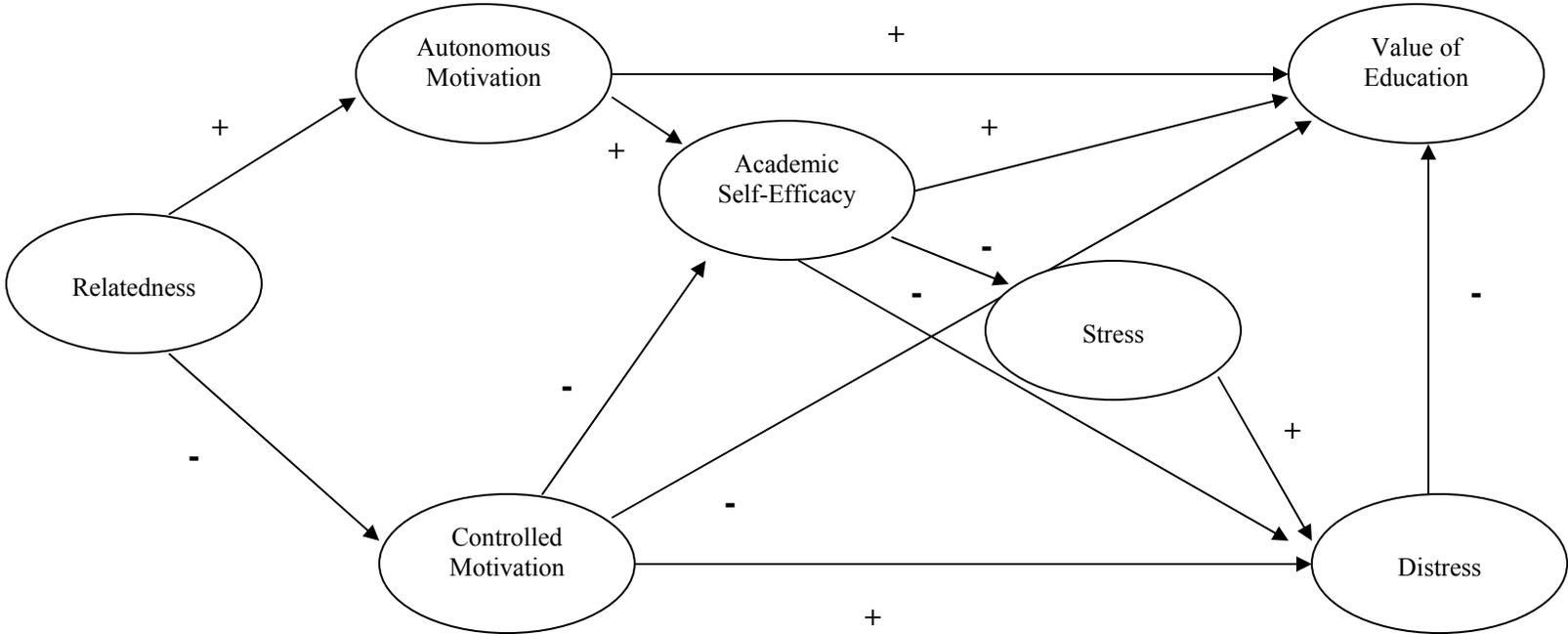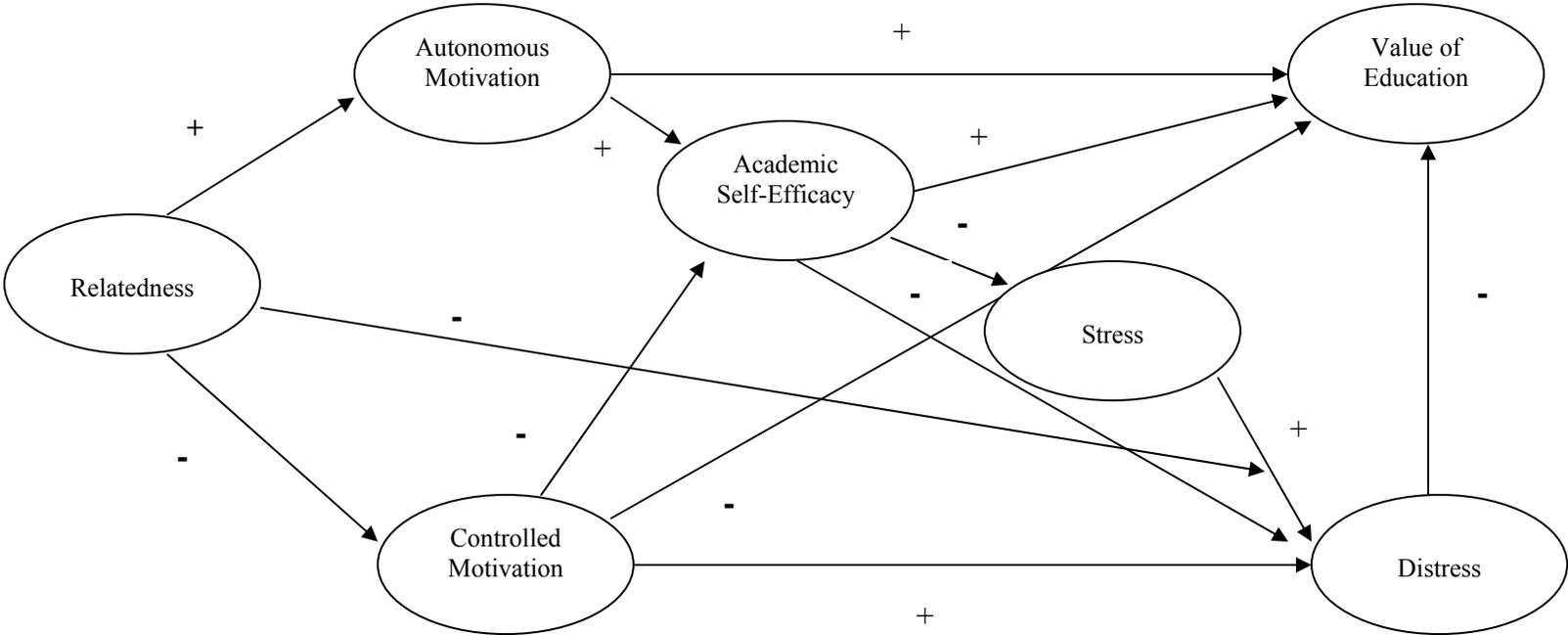
Figure 2. Hypothesized Model 2

Figure 3. Hypothesized Model 3

Autonomous Motivation

Academic Self-Efficacy

Value of Education

Relatedness

Stress

Controlled Motivation

Distress

+   +   +   +   -   -   -   -   -   -   +   +

CHAPTER II

Review of the Literature

The importance of creating a model which can accurately portray the relationships among resiliency characteristics and critical adolescent outcomes cannot be understated. Research has shown that adolescent well-being and persistence are affected by important resiliency constructs such as relationships with school members and family (Cohen & Wills, 1985; Patrick, Ryan & Kaplan, 2007), motivation (Deci & Ryan, 1987; Deci & Ryan, 2008), self-efficacy beliefs (Bandura, 1997; Solberg, Close & Metz, 2002), and stress (Hobfoll, 1989; Solberg, Valdez & Villareal, 1994). Nevertheless, there continues to be discrepancies in adolescents' exposure to and perceptions of these constructs. For example, a study by Anderman (2002) using a large, diverse sample of adolescents found that urban school students' perceived lower levels of belongingness than their suburban counterparts. Other discrepancies have been noted by educational researchers such as Stanton-Salazar (1997) and Darling-Hammond (2004) who point to the inequalities of opportunities and resources afforded to minority students.

Because these discrepancies exist, it is argued that we must uncover the resiliency constructs that can be most effectively integrated into all adolescents' curriculums. Self-determination theory, social-cognitive theory, and diathesis-stress models are three theories which have each attempted to explain one or more of these important resiliency constructs. However, an integration of resiliency constructs from all three of these theories does not currently exist and therefore is the critical aim of this study.

Self-determination Theory

Motivation

Self-determination theory, as developed by Deci and Ryan (1987), offers us a window into the inner resources that guide a person's actions, direction, and persistence. More specifically, it is concerned with the construct of motivation and its nature to produce both activation and intentions. It is the very nature of motivation that has spurred the development of numerous theories that describe the construct in differing ways. Deci and Ryan's (1985) initial conceptualization of this construct centered on the differentiation of motivation as primarily intrinsic versus extrinsic. Intrinsic motivation involves a person engaging in a behavior because they find it both interesting and satisfying. On the other hand, extrinsic motivation involves undertaking an activity to either receive a reward or escape some type of punishment (Deci & Ryan, 2008)

Unlike other researchers who have studied motivation throughout the years, Deci and Ryan (2008) also maintain that these two types of motivation are separate constructs and that they should not be considered additive in nature. Therefore, total motivation is unlikely to be a good predictor of performance because intrinsic and extrinsic motivation should not be combined. Evidence for this assertion was found after completing a meta-analysis of over 100 studies which found that overall, extrinsic rewards actually decreased intrinsic motivation (Deci, Koestner & Ryan, 1999). In other words, when people were given an extrinsic reward (money, award) for

doing an activity that was normally intrinsically motivating to them, they tended to lose interest and subsequently undermined their original motivation.

In moving forward with the constructs of self-determination theory, Deci and Ryan (2008) have now begun to shift focus on understanding which actions a person feels they have choice or autonomy over and which they feel are being controlled by others. Their current conceptualization of self-determination theory now views intrinsic motivation as autonomous in nature, while extrinsic motivation is considered to be controlled in nature. In addition, they also break down motivation further into four categories, of which two can also be considered autonomous. These two forms of motivation, labeled intrinsic and identified/integrated, are autonomous in that they are concerned with volition and choice. They involve the person accepting responsibility for their behavior and integrating an identification within their true self. Additionally, two other forms of controlled motivation, called external and introjected, involve people who feel they are being controlled by others and who do not accept external demands as their own. Therefore, conceptualization of motivation has moved away from the idea of strictly intrinsic and extrinsic motivation to a model that considers the role of autonomy. Thus, self-determination theory today views the constructs of autonomous and controlled motivation as more relevant to study.

Locus of Control

A similar line of research, locus of control theory, has also utilized the internal-external distinction. However, unlike self-determination theory which deals with the person's reasons for engaging in a task, locus of control theories refer to a person's expectations that they are in control of their success. A person is therefore said to have an internal locus of control if they expect their behaviors and reinforcements to be related. This construct is different from those in self-determination theory as it is anchored to these expected reinforcements, whereas intrinsic/autonomous motivation is not (Deci & Ryan, 1987). More specifically, intrinsic/autonomous motivation involves a person engaging in an activity because it is interesting or enjoyable to them, rather than because they expect to be successful at it (Eccles & Wigfield, 2002).

Motivation and Distress

A study by Ryan and Connell (1989) found evidence for the relationship between the continuum of motivational styles and multiple well-being indicators. Using a diverse sample of elementary aged students, they found that more autonomous forms of motivation were related to positive coping and self-reported enjoyment. Furthermore, students endorsing a controlled motivation style were found to have an amplification of anxiety.

Walls and Little (2005) also studied the impact of motivational style on school adjustment outcomes. Like Ryan and Connell (1989) they utilized an ethnically and socioeconomically diverse sample, though students ranged in age from middle school to early high school in this sample. Results again indicated that the more autonomous forms of motivation resulted in significant direct effects with school well-being and positive affect. In addition, the most controlled form of motivation, extrinsic, resulted in a significant direct effect with negative affect. Taken together, these studies would indicate that autonomous motivation is

negatively related to distress while controlled motivation is positively related. However, it should be noted that both samples, though diverse, included youth in a younger age range then the population being addressed in the current study.

Finally, Close and Solberg's (2008) study addressed the relationship between motivation and distress in their structural model predicting achievement, distress, and retention with predominantly Latino youth. While their study found evidence for the relationship between controlled motivation and distress, it did not find a relationship to exist between autonomous motivation and distress. Instead, they included the construct of self-efficacy (which will be described below) in their model and found it completely mediated the relationship between autonomous motivation and distress. Wall and Little (2005) also found evidence that agency beliefs (similar to self-efficacy) mediated the relationship between more autonomous forms of motivation and school well-being, positive affect, and negative affect. Therefore, an aim of this study will be to further elucidate this relationship with a larger, more diverse sample of adolescents.

Relatedness and Motivation

Relatedness is another resiliency construct that has arisen out of the self-determination literature as being central to the constructs of autonomous and controlled motivation. Relatedness involves the quality of relationships and support a student feels they have with their teachers, peers and family (Deci, Vallerland, Pelletier & Ryan, 1991). It posits that when students feel more connected to each of these groups of people that they will in turn display more autonomous motivation and better psychological health/well-being. Using structural equation modeling, Patrick, Ryan and Kaplan (2007) found evidence for the importance of relationships and their impact on personal motivational beliefs, engagement in the classroom and achievement. In addition, the support from teachers and peers not only led directly to increased engagement in the classroom, but also was found to be mediated by personal motivational beliefs. Therefore, this study provided strong support for the hypotheses that student's perception of their social environment affects their personal motivation beliefs, which then in turn affects classroom engagement and achievement. Of note, however, is the limitation that this study was conducted with middle school children (5th graders) who were predominantly European American. In addition, data for achievement outcomes were collected only at one point in time and therefore cannot actually infer cause.

Several other researchers have studied the effects of relationships on achievement and achievement motivation. In a review of resilience in at-risk children, Masten and Coatsworth (1998) discussed the role that both peer and family support plays in academic achievement. Furthermore, they noted the importance of designing interventions to tap into adaptational systems that are strongly tied to competence in at-risk youth, such as relationships with significant others. A study by Ryan (2001) also explored the relationship between peer relationships and achievement motivation. Ryan (2001) utilized Hierarchical Linear Modeling to determine whether peer groups affected student's overall achievement and motivation. While she was able to show support for a relationship between peer groups and intrinsic motivation, she could not find relationships on another form of motivation that she studied called utility motivation. Utility motivation was a subscale made up of questions concerning the importance

and usefulness of one's schoolwork. It could be argued that this is not actually a type of motivation and that this study may have benefited from instead using a measure that looked at controlled motivation (see explanation above under the heading *self-determination theory*).

Relatedness and Stress/Distress

Cohen and Wills (1985) have also argued for the relationship between social supports and well-being. Like research on the construct relatedness, they theorize that connections to friends, family, and teachers are important and may buffer the role that stress plays on students' distress level. In addition, Cohen and Wills (1985) emphasize the importance of conducting research on these constructs that utilize measures that are reliable, valid and not confounding, and employ large samples. It is argued that while they offer information on the role of social support for adolescents, they also look beyond the conceptualization by including stress in their model and outcomes that are not strictly psychological but instead are also focused on general health and well-being.

Studies have also examined the impact of peer rejection on overall physical well-being in high school students. Recently, Brendgan & Vitaro (2008) conducted a study with results that supported the role of peer rejection in compromising adolescents' physical health. Additionally, while they included the role of stress in this process by examining preexisting vulnerabilities that put students more at risk for developing stress, they did not look for the possibility of relationships with peers acting as a buffer. Furthermore, their study lacks generalizeability as it was made up of predominantly white participants from average socioeconomic backgrounds. While it is important to look at stress and the role that preexisting vulnerabilities may play, this current study is more in line with the call by Cohen and Wills (1985) to search for potential factors that may buffer the effect of stress on distress.

Social Cognitive Theory

Focusing on the personal constructs that one uses to exercise control over outcomes is what makes social cognitive career theory so appealing for use with adolescents. One such personal construct, self-efficacy, has been found to be particularly meaningful with this population. Defined by Bandura (1986) as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391), self-efficacy is both specific and complex. More specifically, it is described as one's view of their abilities in a particular life domain (i.e. academics, social, career decisions), and can vary greatly depending on the context (Bandura, 1997).

Several important sources of information are hypothesized to affect one's sense of self-efficacy: performance accomplishments, vicarious experience, verbal persuasion, and physiological states (Bandura, 1977). Any given source may either enhance or damage a person's level of confidence in their abilities. Noted for being the most influential source, performance accomplishments include opportunities for students to personally participate in a mastery experience. Bandura (1977) explains that self-efficacy can be developed through repeated personal exposures to success and once established can also generalize to other life situations. Vicarious experiences, though not personally experienced, can also have a major impact on a

student's self-efficacy. By seeing others perform activities successfully that they may have deemed too difficult, students are more likely to persuade themselves that they too can do the task. Furthermore, verbal persuasion is another common technique that persons use to attempt to influence others. By leading someone, through suggestions and encouragement, this has also been shown to increase their sense of confidence. Finally, emotional arousal of one's physiological state can be another very powerful source of information that influences a person's beliefs. Through diminishing or increasing one's emotional arousal, Bandura (1977) posits that a person can be motivated into action.

Bandura (1997) also discusses the concept of outcome expectations, which are an individual's estimate of the probability that their behavior will result in a specific outcome (i.e. physical, social, self-evaluative). They include the consequences a person imagines when they think about taking a particular action. Both outcome expectations and self-efficacy beliefs can affect the types of activities a person will choose to pursue or avoid. Additionally, self-efficacy beliefs can have a direct effect on outcome expectations (Lent, 2005). Research has also shown that self-efficacy beliefs are able to be shaped by interventions that focus on building self-efficacy in specific domains (i.e. academic) (Solberg, Close & Metz, 2002).

Self-efficacy's relationship to Academic Achievement and Persistence

The construct of self-efficacy has been applied specifically to research looking at academic achievement and persistence intentions. In a classic study by Lent, Brown and Larkin (1984), college students were classified into either a low or high self-efficacy group. Results emerged to find that those students who had higher self-efficacy beliefs were also more likely to have better grades and persist longer in their college major.

These results are important for several reasons. First, Lent Brown and Larkin (1984) were able to show that self-efficacy beliefs can affect important outcomes, even within a small sample. However, one would caution generalization of these results to other samples without first establishing validity due to the small sample of college students that was lacked great diversity. In addition, future studies might also utilize regression analysis rather than looking at differences between a high self-efficacy group and a low self-efficacy group. Furthermore, this study did not contain measures that focused on a specific domain of self-efficacy but rather presented a measure that looked at self-efficacy as a global construct. Bandura (1997) would likely suggest that this view of self-efficacy is not accurate and that it should be viewed as domain specific construct.

Self-efficacy and Stress

Jerusalem and Schwarzer (1992) conducted research to study the role that self-efficacy plays in the stress appraisal process. In their study, participants were fist given a battery of personality scales, including a measure of general self-efficacy level. Next, participants were put through nine series of procedures, each consisting of difficult performance tasks, performance feedback and items of self-report. All of these tasks contained task-specific stressors (time pressure, difficulty) and failure threats to the participants' egos. In the first six series participants had to solve 15 anagrams that increased in difficulty level. This was then followed by three tasks

consisting of intelligence test items. Participants were given 40 seconds to solve each anagram and if they did not a bell sounded and the screen changed to the subsequent one. After each series of tasks participants were either given success feedback (fictitious) or failure feedback. Feedback was centered both on individual performance and age group performance. This cycle was then repeated nine times, each with the six anagrams, three intelligence items and feedback. At the end of the cycles participants were debriefed.

Results from their experiment showed that self-efficacy was an important predictor of participant's subjective perceptions following the failure experiences. Those low in self-efficacy felt they had unfavorable reactions to the stress conditions and evaluated both threat and loss much higher. This research showed that person variables (level of self-efficacy) are strong predictors of perceived challenge, threat and loss in a stressful situation. Therefore, feelings of positive self-efficacy can lead to positive personal beliefs that one has the capacity to resist stress (Schwarzer & Jerusalem, 1995). Again, results from this study must be viewed with caution due the conceptualization of self-efficacy as a general construct and the use of an adult population for the sample.

Self-efficacy and Distress

Much of the work describing the role of self-efficacy on distress has focused specifically on psychological distress/well-being (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Moeini, Shafii, Hidarnia, Babaii, Birashk & Allahverdipour, 2008; Muris, 2002). For example, Bandura et al. (1999) studied the role that both academic and social self-efficacy played on depression in children, finding that students with high self-efficacy beliefs in these domains reported significantly lower depression. Muris (2002) also studied the role of self-efficacy and its effect on anxiety and depression in adolescents. While a study by Moeini et al. (2008) did utilize a more all-encompassing distress measure (including somatic symptoms and social dysfunction), their study also looked at self-efficacy as a general construct, weakening their findings. Attempts are being made by Bandura (2004) to begin studying the role of self-efficacy on a wider definition of well-being/distress that also includes health. Therefore, this study will move in this direction by incorporating the construct of distress that includes both psychological and health outcomes.

Diathesis-Stress Models

Stress has been considered such an important factor in the development of psychopathology that it has been featured by a variety of models to be one of the most important contributors (Ingram & Luxton, 2005). Specifically, diathesis-stress models, which discuss the role that both stress and predispositions (or vulnerabilities) play in eliciting poor psychological well-being in persons, will be the focus for this study. In addition, they also posit that all persons have some level of predisposing factors for a number of mental health issues; however, whether one will actually occur depends on the interaction of numerous risk factors with the level of stress. Therefore, the importance of finding variables which have the ability to both lower one's stress level and keep it in check cannot be understated enough when working with a high school population.

Research studies by Ingram and Luxton (2005) and Wagner, Chaney, Hommel, Andrews and Jarvis (2007) describe the role of a diathesis in putting one at risk for mental health disorders. In fact, the diathesis stress model began out of the literature on schizophrenia in the 1960's (Meehl, 1962) which highlighted the role of stress on psychopathology and brought the diathesis and stress concepts together (Ingram & Luxton, 2005). Since that time, the relationship between a diathesis and stress has been conceptualized in numerous ways. For example, diathesis-stress models can be viewed as additive, where together the diathesis and stress produce a disordered state. They can also been seen as ipsative, or rather that when one risk factor is present it takes less of another factor to bring about a disorder. Mega models have also been suggested by researchers and promote the idea that both the diathesis and stress must be of considerable strength before a disorder will appear.

Finally, and of most relevance to this study, risk-resilience continuum models present the idea that certain protective or resiliency factors exist that allows a person to be resistant to the effects of stress. Ingram and Luxton (2005) describe these models which describe both stress and vulnerability as existing on a continuum. Stress can viewed as a range from low to extreme while vulnerability can be seen as a range from vulnerable to resilient. Therefore, at the extreme end of vulnerability, little stress is need to trigger disorder while at the resilient end an extreme amount of stress must exist before psychopathology will develop.

While each of these models offers important information regarding the role of a diathesis on stress, it is the risk-resilience continuum model that appears to offer direct implications for school interventions. By designing interventions aimed at increasing resiliency, it is likely that adolescents may be more resistant to the effects of stress. Nevertheless, I would argue that these models and the majority of research on the diathesis stress model up to this point have also suffered by not including other possible outcomes into their models. In general, research in this area has focused on the outcome of mental health pathology and has not considered the effects that the diathesis and stress may be having on general well-being and health outcomes. I believe this is a major deficit within the literature base and one that my study will attempt to improve upon.

Other Important Theoretical Conceptualizations of Stress

One final conceptualization of stress that is I feel is important to consider when researching adolescence is a model proposed by Hobfoll (1989) entitled The Conservation of Resources. With this model, Hobfoll believed he could fill in the gap between conflicting environmental and cognitive viewpoints on stress. The basic belief behind his model was that all people "strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources" (p. 516). Hobfoll defined resources as objects, personal characteristics, conditions or energies that an individual values and allows them to attain these things. Object resources are those valued for their physical nature, such as a home. They are seldom studied in stress research but are linked to socioeconomic status, which is an important factor in resisting stress. Conditions are resources people seek such as marriage or tenure. They can have both positive and negative effects (a marriage can be a source of support or turmoil). Personal characteristics are resources that are generally thought to aid in stress resistance. They include things like self-efficacy and motivation. Finally, energies are resources such as time,

money and knowledge. These resources are quite valuable because they can aid a person in attaining other resources.

The argument behind this model is that environmental circumstances often stand to threaten or take away a person's resources. These losses are important for several reasons: they have instrumental value to people and they help people define themselves. The Conservation of Resources model goes beyond other models of its time by focusing specifically on the state of stress. It predicts that when faced with a stressful situation a person will strive to minimize the loss of resources. In addition, it also follows that when people are not currently experiencing stressors that they will attempt to store resources for the future.

This model offers important implications for research with adolescents in that it focuses on the importance of gaining and maintaining resources. Like diathesis-stress models, the Conservation of Resources focuses on both personal characteristics (i.e. self-efficacy) and conditions (i.e. relationships with others) that can be strengthened in order to both buffer against stress and improve overall well-being (Cohen & Wills, 1985; Ingram & Luxton, 2005).   Concepts from this theory are equally important to consider when determining constructs that must be included in an overall model that predicts adolescent achievement, retention and well-being.

 Stress on Adjustment/Distress

Studies like the one by Solberg, Valdez, and Villareal (1994) have tested the role of a diathesis-stress model on factors other than mental health outcomes. In this study, the researchers looked at the role of stress on Hispanic student's college adjustment using regression analysis. In accordance with the diathesis-stress model, individual characteristics (i.e. cultural pride) were expected to buffer a student from the negative effects of stress. Like Vega, Warheit and Meinhardt (1985) argued, the researchers also expected that social support would moderate the relationship between stress and adjustment. Consistent with their hypotheses, social support was found to have a positive relationship on overall college adjustment. However, it was not found to moderate the relationships between stress and adjustment. Cultural pride was also not significantly related to college adjustment in their sample. Nevertheless, the study did find that the combination of academic stress, social stress and perceived social support accounted for 59% of the overall variance in adjustment. While it could not provide support for the Vega et al. (1985) model, it was able to bring to our attention the tremendous effect that stress has on college adjustment.

This study offered evidence for the role of stress on college student adjustment, though it also had several drawbacks that should be noted. First, while the sample used in this study was of an adequate size for the statistical analyses being run, it also was made up solely of Hispanic students. This issue calls to question whether the results may be valid with other populations and makes replication of these constructs with another, more diverse sample imperative. In addition, the sample consisted solely of college students, which makes generalizeability to junior high/high school populations more difficult.

Regarding the instruments used by the researchers, reliability for the social support scale was determined using a sample of elderly adults and teachers. In addition, while the researchers felt

that the construct of financial stress was warranted to include in the stress scale (due to prior research studies indicating its importance), the scale had only two items which loaded together and were later found to add no variance to the overall regression model. This was also the case with the stress efficacy subscale of stress, which led me to the conclusion that these subscales may not have been good indicators of the construct of stress. Future studies attempting to measure the relationship between stress and other academic/adjustment outcomes must be certain to use reliable and valid instruments that provide strong evidence for accurately measuring the construct of stress.

Finally, it can be argued that this study's model could have been improved upon by including multiple indicators for social support (i.e. family, peers, teachers) that numerous researchers have found contribute to both psychological and physical health outcomes (Cohen & Wills, 1985). Because this study chose to define social support more broadly, it may have lost its predictive power in understanding the moderating relationship that social support plays between stress and adjustment. In addition, diathesis-stress models argue for the inclusion of other resiliency factors that can play a protective role (i.e. self-efficacy) but which this study did not consider. These factors are critical to consider when creating future studies (Ingram & Luxton, 2005).

<center>Value of Education</center>

Because only a small body of literature currently exists on this construct, it is an aim of this study to begin the investigation of this outcome variable in order to contribute to the research on important adolescent outcomes. As noted above, the majority of studies looking at "at risk" students have chosen to instead focus on the outcome of dropout status. While this construct is clearly important when addressing the issues faced by youth today, without a clear and consistent measurement of the construct it is impossible to draw implications across studies. For example, the studies by Close and Solberg (2008) and Solberg et al. (2007) measured retention by tracking whether students received grades at the end of the academic year. However, both of these studies failed to take into account students who may have moved (switching schools and therefore not dropping out), immigrated/migrated or passed away during the course of the school year. Another study by Vallerand, Fortier and Guay (1997) also aimed to study the issue of high school dropout status by asking students whether they had considered or intended to drop out of school while a study by Stevenson, Maton and Teti (1998) utilized a simple self-report question of drop-out status. Again, in both cases these studies chose to draw conclusions about student retention without measuring it in a reliable way.

For these reasons, the need for a construct which has the potential to reveal the educational aspirations of students while also offering a way to better understand the relationship between resiliency constructs cannot be underscored enough. A study by Stevenson, Maton and Teti (1998) was one of the first to attempt to measure the construct of school importance in a quantitative way. In their study they focused on understanding the relationship between the importance of school and dropout rates in pregnant teens. Several limitations to this study should be noted, however, as the sample utilized was fairly small and lacking diversity. Furthermore, it involved only pregnant adolescent women and therefore the results are of little utility for making generalizations to all high school students.

The study utilized a simple, four-item measure to assess for importance of school that included sample items such as "how important to you is finishing high school (p. 379)?" Reliability for the measure was also somewhat low, .71, considering the small number of items. Overall, results indicated that well-being positively correlated with school importance, though they noted that future studies should continue to study this issue. Furthermore, the researchers found that importance placed on schooling was also positively correlated with school enrollment, thus making the argument that self-reports of the importance of school are accurately reflecting students' behaviors.

More recently, two other studies have also attempted to look at the construct of importance/value of education. Hufton, Elliot and Illushin (2002) conducted a qualitative research study that sought to better understand the educational motivation of students from three differing countries (Russia, England and the USA). Using semi-structured interviews they noted that in each set of participants the comments regarding the value for their education were realistic and concerned with the effect it was likely to have on their future income, lifestyle and security. A second study by Khattab (2003) also looked at a specific group of participants, Arab-Palestinian high school students, and found that students' perception of the value of their education was positively related to higher educational aspirations. Of note, however, is the fact that this study utilized a 1-item instrument to measure importance of education and therefore results should be viewed with caution. Overall, while each of these studies has begun to offer consideration for the construct of "value of education" they have each been lacking in their own way. Therefore, the current study will attempt to fill this whole in the literature by offering a reliable and valid tool for measuring this important construct.

<p style="text-align:center">Models Combining the Theoretical Constructs</p>

Recently, several groups of researchers have undergone studies that examine portions of the model that this study is proposing (Solberg et al., 2007; Close & Solberg, 2008). Both studies, which will be described in detail below, utilize samples of high school students from a diverse, Midwestern inner city school. They offer invaluable information about the relationships between components from social cognitive theory, self-determination theory and diathesis-stress models which allow us to better understand adolescent functioning. However, it is believe that a more complete model exists, which combines constructs from both research studies, and can offer a clearer picture for schools that are looking to intervene and improve upon various adolescent outcomes (i.e. retention, wellbeing, stress, and academic achievement). Each study will be described below, followed by a thorough critique of their methodology/models. Following this, a new, more complete model will be put forth for consideration.

A Study on At-risk Profiles

A recent study by Solberg et al. (2007) offered much needed information to the literature base on resiliency in adolescence. Their study answered Masten's (2001) call for research which moves away from describing the protective factor's relationship on outcomes and towards categorizations of individuals who share common characteristics. Using hierarchical cluster analysis (HCA), the researchers were able to classify a large sample of urban youth into six different groupings. Out of these six groupings, five groups emerged as being made up of "at-

risk" clusters of characteristics (most vulnerable, vulnerable, disengaged, resilient and moderately resilient) while one group was found to be "not-at-risk."

Upon closer analysis, the authors described each group in terms of the characteristics they possessed more or less of. These characteristics included connections with teachers and peers, family support, academic self-efficacy, intrinsic motivation and exposure to direct and indirect violence. Of most interest to the topic at hand seems to be the two groups which were titled "resilient" and "not-at-risk." Results showed that the "resilient" group had significantly higher exposure to both indirect and direct violence than any other group. However, they also reported higher levels of self-efficacy and intrinsic motivation than four other groups, a greater connection to peers and teacher than three other groups and higher perceived family support than two other groups. This group was described as resilient due to the high number of resilience characteristics they possessed in the face of a greater exposure to violence than any other group. Results for the "not-at-risk" group found that these students were significantly more connected to their peers, had higher self-efficacy and higher intrinsic motivation than four other groups. They also reported significantly less violence exposure than four other groups and had strong connections to their teachers and peers indicating that they possessed none of the risk factors that were expected to lead to school difficulties.

These results offer many important implications for consideration. First, by describing five different groups of individuals that were considered to be at varying levels of "risk," the authors expected that groups with higher levels of individual and relational protective factors would also have better academic and psychosocial outcomes (regardless of violence exposure). This hypothesis received only mixed support, as several "at risk" groups with higher levels of protective factors did not differ on the academic and psychosocial outcomes. These findings would seem to agree with Masten and Coatsworth (1998) who stated that "resilient children do not appear to possess mysterious or unique qualities; rather, they have retained or secured important resources representing basic protective systems in human development" (pg. 212). From these results it might be concluded that it is more important to determine which resources and protective factors are important to intervene upon, rather than focusing on describing different types of "at-risk" youth.

Additionally, while this model attempted to study the numerous resources and factors from social cognitive theory, self-determination theory and diathesis-stress models that affect outcomes, it could be argued that the methodology utilized lacked the strength to describe the relationships between these constructs to their fullest. Several major advantages of this study were that it collected multiple indicators (in this case, subscales) for each latent construct and it utilized a large, diverse sample. However, because the authors ran only HCA analyses we are unable to gain an understanding of how these latent constructs related to and affected one another. The current study will argue that this data set could likely add more strength to the at-risk literature by utilizing a structural equation model to describe the relationship between the constructs. In the next section, a study will be described which attempted to do just this.

A Structural Model to Predict Achievement, Distress and Retention in Adolescents

A newly published study by Close and Solberg (2008) also attempted to describe the relationship between numerous variables that have been deemed important for adolescent development and achievement. Utilizing constructs from both social cognitive and self-determination theories, this study created a structural equation model to predict achievement, distress and retention among a large sample of lower-income, predominantly Latino youth. Results indicated good fit for the overall model, which included the latent constructs of relatedness, autonomous motivation, controlled motivation, self-efficacy, distress, achievement and retention. More specifically, the model indicated that for students who felt a greater connection to their school and teachers (relatedness), autonomous motivation for attending school was also higher. In addition, when students reported higher autonomous motivation they were also more confident (i.e. higher self-efficacy) and performed better academically. Students who had higher self-efficacy also reported less psychological and physical distress and had higher academic achievement. School retention was also predicted by the combination of academic achievement and a lack of distress. In addition, though autonomous motivation was not related to distress (as hypothesized), a test for mediation concluded that the relationship was fully mediated by self-efficacy.

This study offers several important implications for schools. First, it confirms the relationships between important constructs that have been suggested by both social cognitive and self-determination theories. In addition, it offers the suggestion that interventions designed to promote autonomy, increase self-efficacy and build relationships may offer effective means for promoting health, increasing academic achievement and ensuring retention.

Nevertheless, this model lacks full descriptive power for several reasons. First, the model fails to consider the important role that stress, a construct proposed by diathesis-stress models to have major implications on health (both mental and physical) and adjustment, plays in an adolescent's development. By choosing not to consider this construct in the model, it is likely the author's are missing a critical piece of information that would more accurately describe a model of adolescent achievement and retention.

In addition, several of the subscales utilized to measure constructs in this study were not as inclusive as they could have been. For example, relatedness was simply made up of subscales that assessed for quality of interpersonal relationships with one's teacher and connections to one's school. The self-determination literature has specifically pointed out the importance of studying relationships not only with teachers but also with peers and family (Anderman & Kaplan, 2008; Patrick, Ryan & Kaplan, 2007), which is an area that the current study plans to expand upon.

Caution should also be taken when generalizing from this study's sample as it was made up of students from lower income levels (as assessed by the percentage of students receiving free lunch) that were predominantly Latino. While it may appear to some that these factors alone would qualify the sample to be "at-risk," the authors make no such assertion in the description. Like Luthar, Cicchetti and Becker (2000) point out, variations in definitions and terminology can lead the field (of resiliency research) to question whether a model is generalizeable to other adolescents. Because the authors of this study did not directly refer to their sample as "at-risk,"

nor did they offer a thorough description of the sample's characteristics, it would be difficult to make strong conclusions about the transferability of their findings to the resiliency literature.

<div align="center">Conclusions</div>

The relationships between constructs from self-determination theory, social cognitive theory and diathesis-stress models offer important implications for interventions which can impact adolescent's distress level and value place on education. While previous models (Solberg et al., 2007; Close & Solberg, 2008) have attempted to combine these theories in ways that describe the relationships between these variables, they have each been lacking in their own way. A new model, which utilizes constructs from both studies and expands upon current conceptualizations of the three theoretical models can be achieved in the following way. First, using self-determination theory this study will reexamine the role of relatedness and its relationship with both autonomous and controlled motivation. In addition, the construct of relatedness will be expanded to include teacher, family and peer relationships. Social cognitive theory will then be utilized for its work regarding the role of self-efficacy on both psychosocial outcomes and stress. Finally, a diathesis-stress model will be included to introduce the construct of stress into the new model that was missing in the study by Close and Solberg (2008). In addition, it will also offer an expansion in the understanding of stress by considering the relationship it may on overall health/distress level. By creating a structural model that combines these constructs we are likely to gain deeper insight into the areas where intervention will be most helpful to increase student retention and more adequately prepare adolescents for the world of work. Based on the literature reviewed above, the structural models depicted in Figures 1-3 were hypothesized. Specific hypotheses which are embedded in the models are reviewed below.

Pathways linking relatedness to autonomous motivation (path 1) and controlled motivation (path 2)

First, it is hypothesized that higher levels of relatedness will be associated with higher levels of autonomous motivation and lower levels of controlled motivation. This hypothesis comes from the self-determination literature which suggests that relatedness is a central and essential construct in the enhancement of motivation. It notes that students who feel more connected to peers, family members and teachers are more likely to feel a sense of autonomy that they then transfer to their actions (Ryan & Deci, 2000; Deci et al., 1991; Masten and Coatsworth, 1998 and Ryan, 2001).

Pathways linking autonomous and controlled motivation to academic self-efficacy (paths 4 and 8)

Next, it is hypothesized that higher levels of autonomous motivation will lead to higher levels of self-efficacy, while higher levels of controlled motivation will lead to lower levels of self-efficacy. Walls and Little (2005) noted the importance of studying these relationships when they underwent a study to combine constructs from self-determination theory and action-control theory. They found that agency beliefs (closely related to self-efficacy) mediated the relationship between motivation styles and well-being.

Pathways linking autonomous and controlled motivation to value of education (paths 3 and 10)

It is also hypothesized that higher levels of autonomous motivation will lead to higher levels of value for one's education, while higher levels of controlled motivation will lead to lower levels of value for education. Very little research has examined the relationship between these constructs up to this point, though a qualitative study by Hufton, Elliott, and Illushin (2002) began to highlight the reasons behind why students may be more likely to value their education. Furthermore, they noted that when students had a more intrinsic or autonomous view of education that they were more likely to endorse the importance of working hard.

Pathway linking controlled motivation to distress (path 9)

Next, higher levels of controlled motivation are hypothesized to result in higher levels of distress. This hypothesis comes from the extensive self-determination literature that has shown how students' lack of autonomy leads to higher levels of distress and anxiety (Ryan & Connell, 1989; Deci & Ryan, 2000).

Pathway linking autonomous motivation to distress (path 5)

Unlike the majority of research out of self-determination theory which has also found autonomous motivation to be negatively related to distress, this study aims to replicate the findings by Close and Solberg (2008) which showed that this relationship was fully mediated by self-efficacy. Thus it is hypothesized that by accurately combining the resiliency constructs of motivation, self-efficacy and distress that we can understand the true relationship that exists between these constructs. Therefore, a relationship between autonomous motivation and distress is hypothesized to not be significant.

Pathway linking academic self-efficacy to value of education (path 7)

Next, it is hypothesized that higher levels of self-efficacy will lead to a higher endorsement for the value of education. While this relationship is again somewhat exploratory due to the limited literature on value of education, a study by Lent, Brown, and Larkin (1984) found that self-efficacy was related to a similar construct, persistence in school.

Pathway linking academic self-efficacy to stress (path 12)

It is also hypothesized that higher levels of self-efficacy will lead to lower levels of stress. This relationship has received support in the diathesis-stress models which assert that self-efficacy is an important predictor of participant's subjective perceptions of threat in reaction to stressful conditions (Jerusalem & Schwarzer, 1992; Schwarzer and Jerusalem, 1995).

Pathway linking academic self-efficacy to distress (path 6)

Next, it is hypothesized that higher levels of self-efficacy will lead to lower levels of overall distress. While Bandura et al. (1999) studied the role that both academic and social self-

efficacy played on depression in children, Muris (2002) studied its effect on anxiety and depression in adolescents.

Pathway linking stress to distress (path 13)

Further, it is hypothesized that higher levels of stress will lead to higher levels of distress in students. Studies that have utilized the diathesis-stress models have found that stress leads to problems with adjustment, both in the college student and general population (Solberg, Valdez & Villareal, 1994; Vega, Warheit & Meinhardt, 1985). Furthermore, they have also noted the moderating role of relationships that will be noted in path 14 below.

Pathway linking distress to value of education (path 11)

Next, it is hypothesized that lower levels of distress will lead to higher levels of value for one's education. Few studies have chosen to explore the relationship between these constructs and therefore this hypothesis could be viewed as somewhat exploratory in the current study. One study which did attempt to look at the relationship between these constructs found that distress was negatively correlated with value of education (Stevenson, Maton & Teti, 1998). However, the researchers utilized a very short measure and a narrow population and therefore this relationship will be re-examined with the current sample.

Pathway with relatedness as a moderator between stress and distress (path 14)

Last, it is hypothesized that relatedness will moderate the relationship that stress has on distress level. Cohen and Wills (1985) argued for the buffering hypothesis that asserts connections to friends, family and teachers are important in controlling the relationship that stress has on one's distress. Furthermore, other studies have posited that this moderating effect is important to study (Solberg, Valdez & Villareal, 1994; Vega, Warheit & Meinhardt, 1985). Therefore, it will be added to Model 3.

CHAPTER III

Methodology

Dataset

The pre-existing dataset utilized for this study was collected by Scholarcentric, an educational services company that develops research-based programs for school districts around the United States. All data was anonymous and the study was approved by the Institutional Review Board at the University of Wisconsin-Milwaukee (UWM).

Participants

A sample of 4,922 students from various schools in the US participated in the study to first validate the measures and then assess for the proposed structural models. Student data was captured from 10 states, including California, Colorado, Connecticut, Florida, Illinois, Massachusetts, Nevada, North Carolina, Texas, and Wisconsin. While demographic data for gender was not available for 790 students, of the remaining 4132 students, 50.7% were male and 47.3% were female. Similarly, demographic data for race was not obtained for 831 students. Of the participants where race was reported, 1706 (41.7%) were White, 650 (15.9%) were African American/Black, 33 (.8%) were American Indian, 91 (2.2%) were Asian/Pacific Islander, 1224 (29.9%) were Hispanic and/or Latino/a, and 387 (9.5%) identified as Other or More than One. It is important to note that while descriptive data was missing for some participants, these students were still included in the overall analyses, as race and gender were not the focus of the structural models. The free and reduced lunch percentage of students included in the study was 46.46%. Furthermore, the sample of students ranged in age from 7th-12th grade.

Procedure

Data collection was undertaken as part of a larger educational program that focused on building success resiliency skills in students. Each teacher who utilized the program in their classroom was first trained on how to administer the instruments and then given a packet that contained reminders and frequently asked questions. The teachers introduced the assessment process in the following way: "Today you will be answering a series of questions about yourself. The answers you choose will be used in a program that we will be starting next week. You will be the only one who sees the answers you choose, so take your time and answer the questions as honestly as you can." Students were then given an instrument booklet that contained the seven survey instruments, a scantron answer sheet, and a #2 pencil.   Students were asked to first complete a demographics questionnaire, followed by six other survey instruments where they rated themselves on a variety of domains (see Appendixes A-F). Throughout the administration students were reminded to work carefully and fill their answers in completely.

Survey instruments assessed the following constructs: relatedness, motivation, self-efficacy, stress, wellbeing and value of education. Spanish versions of the instruments were also made available to any bilingual or monolingual students. Student participation was voluntary and staff remained available throughout the administration to answer any questions that may have arisen.

Upon completion of all measures, trained research assistants then scanned results into a scantron machine. Additionally, at the end of the resiliency skills program each student received an individualized report detailing their personal results and comparing them to a large group of peers with similar characteristics. At the end of the entire intervention the school also received a report showing its students' measurable differences both pre and post intervention on each instrument.

Instruments

Demographic Questionnaire. Participants were assessed for basic demographic information before completing the remaining instruments. Specifically, students were asked to report their gender, race, school name, and teacher name.

Value of Education. Value of Education is seen as one's belief that school and college are vital components to one's success. Participants were assessed using this 10-item measure which focused on the relevance of their education. As this inventory was newly created, face validity was first established by asking a group of teachers to review the instrument and determine how the items should be modified for use with adolescents. Suggestions for re-wording and item changes were made by the team of teachers, which resulted in a number of items being modified for ease of readability. The instrument is hypothesized to be made up of two sub-domains: Importance of School and Importance of College. Sample items from the Importance of School sub-domain include how important it is to "Finish school" and "Learn how to be successful in school." The second domain, Importance of College includes items ask about how important it is to "Find out about colleges" and "Learn how to be successful in college." Remaining items can be found in Appendix A. Students answered with a five point Likert scale ranging from strongly agree to strongly disagree. Higher scores indicate a student value for education is greater.

Academic Self-efficacy. Self-efficacy is defined as one's belief in themselves to perform numerous tasks associated with school success. Research on this construct has found that students who have higher levels of self-efficacy (or confidence) are more likely to obtain positive academic outcomes (Bandura, 1997). Participants undertook this 22-item measure that was created from a modified version of the College Self-efficacy Inventory (Solberg, O'Brien, Villarreal, Kennel, & Davis, 1993) and was hypothesized to contain three subscales: social self-efficacy, class self-efficacy, and test-taking self-efficacy. The items can be found in Appendix B. Sample items for the social subscale include "making new friends in school" while "writing a paper for English class" fell under class self-efficacy. Test-taking self-efficacy asked about a student's confidence to "prepare for a test." Responses were based on the same five point Likert scale with higher scores on the measure indicating higher levels of confidence.

Relatedness. Relatedness refers to the connections that exist between a student and their teachers, family, and peers. More specifically, it taps into a student's sense of belongingness and support from others (Close and Solberg, 2008). Participants were assessed using a 16-item measure that was created from an instrument originally developed for college students (Pascarella & Terenzini, 1980) but modified for an adolescent population. It focused on each of these specific areas: teacher, family, and peer relatedness (Appendix C). Sample items from the

teacher relationship subscale include "teachers here respect me" and "teachers here care about their students." Items from the family subscale include "there are family members I can count on in an emergency" and "members of my family recognize my abilities and skills." Finally, from the peer subscale items include "there is a friend I can depend on for help" and "I have friends here at school." Students responded to the statements using a five-point Likert scale that ranged from strongly disagree to strongly agree. Higher scores on this measure indicate a greater sense of relatedness.

Stress. Stress involves the level of difficulty a student encounters with tasks relevant to their school life. Participants completed this 22-item measure based on the College Stress Inventory developed by Solberg, Gusavac, Hamann, Felch, Johnson and Lamborn (1998). Three subscales were hypothesized to make up the scale: Academic stress, Financial stress and Social stress (Appendix D). A sample item of Academic stress includes "difficulty taking tests" while financial stress includes "difficulty paying for food." An item from the social stress scale involves "difficulty handling relationships." The five point Likert scale was used with higher scores on the measure indicating higher overall stress.

Distress. Distress is defined as the amount of psychological or physically distressing symptoms a student experiences. It was created by adapting the College Distress Inventory (Ryan, Hanin, & Solberg, 1994) for an adolescent population. Participants took this 23-item measure covering a variety of health domains. Five factors were expected to make up this measure including agitation, sleeping difficulties, feeling blue, eating difficulties and physical well-being. All items from the measure can be found in Appendix E. Items from the agitation and sleep difficulties subscales include "loosing your temper" and "being tired but unable to sleep." On the feeling blue subscale, a sample item includes "feeling depressed," while on the eating difficulties subscale "overeating" is an item. The physical subscale includes items such as "headaches." A five point Likert scale asked students to rate how often these experiences have happened to them in the past week, from almost never to almost always. On this measure, higher scores indicate students have endorsed a greater number of psychologically or physically distressing symptoms to be present in their life.

Motivation. Motivation can be viewed as the driving force behind one's behavior. According to self-determination theory (Deci & Ryan, 1987), two main categories of motivation exist, termed Autonomous and Controlled motivation. Autonomous motivation involves a person engaging in a behavior out of personal choice or interest whereas controlled motivation involves making choices based on guilt or external pressures. Participants completed this 15-item questionnaire based on the Academic Self-Regulation Questionnaire (Ryan & Connell, 1989) that was broken into two scales, each with two subscales (Appendix F). Autonomous motivation included the sub-domains of Intrinsic and Identified motivation. Intrinsic motivation involves engagement in an activity in order to experience enjoyment and pleasure. A sample items that explains why a student attends school includes "because I really enjoy school." Identified regulation involves engaging in an activity because doing so is personally rewarding. An example includes "because I see the importance of learning." Controlled motivation was the second scale and included the sub-domains of Introjected and External motivation. Introjected regulation involves internalizing others' rules about how to think, feel, and act while External regulation involves engaging in an activity in because it is a requirement. Sample items include "because I don't

want to let others down" and "because if I don't, I'll get punished." Again students answered based on a five point Likert scale with higher score indicating greater amounts of Autonomous or Controlled motivation.

Data Preparation and Analysis

Data analysis for this study will begin by first evaluating the psychometric properties for each of the six measures that will be utilized as the latent constructs in the structural models. First, to address the measurement portion of the model, exploratory factor analysis will be undertaken with each instrument. The overall sample will be split in half, after which each measure will be examined for reliability of both the overall scale and subscale. Modifications will be made based on best practice guidelines and only after acceptable reliability levels are met will the measures be included in the models. The process of reevaluating each instrument is being undertaken due to past studies where analysis with these instruments has not been as large or diverse. Univariate Analysis of Variance (ANOVA) will also be run to determine whether the instruments can be utilized with all genders/races.

Both confirmatory factor analysis and path analysis will then be conducted using structural equation modeling. Each of the models in this study are said to have two parts: a measurement model and a structural model. After reliability levels are acceptable from the exploratory factor analysis, the second half of the dataset will be utilized to confirm this overall structure. Once this structure is found to have good fit the structural models will be run.

Construct validity for the instruments will also be assessed using a second sample of students who completed these measures, along with several other comparison measures. The measures will be evaluated based on the hypothesized relationships that are proposed. Before beginning analyses of the structural models, the possible nesting structure of the data will be explored using "complex analysis" in Mplus 4.2 (Muthén & Muthén, 2006). This technique is utilized because students are nested within their schools; therefore, it may be necessary to adjust the standard error (SE) in each of the model paths to account for this. The first model to be run, Model A (see Figure 1), will test the previous literature's hypothesis that self-efficacy completely mediates the relationship between autonomous motivation and distress. A seventh variable (stress) then will be added to the model and Model 2 will be run (see Figure 2). Finally, a third model will be run that tests the significance of including relatedness as a moderator between stress and distress (see Figure 3). Hypothesized direct affects and the corresponding structural paths in the overall resiliency model (see Figure 6) will then be estimated.

CHAPTER IV

Results

All data was analyzed using SPSS 15.0 for Windows (2006) or Mplus 4.2 (Muthén & Muthén, 2006), the latter of which was used for estimating fit of the hypothesized structural models and confirmatory factor analysis structure for the six measures.

Data Analysis Plan

Data analysis for this study began by first evaluating the psychometric properties for each of the six measures that were later utilized in the structural models. The overall sample was first split in half, after which each measure was examined for reliability of both the overall scale and subscale using exploratory factor analysis. Modifications were made based on specific cutoffs that are outlined below. Univariate Analysis of Variance (ANOVA) was also run for each measure to determine whether there were significant differences due to gender or race. After reliability levels were acceptable, the second half of the dataset was then utilized to conduct confirmatory factor analyses. Next, using a secondary dataset, several of the measures were further examined for validity evidence. Finally, each of the three structural equation models was run with the entire dataset and evaluated for overall fit.

Measurement Model

Exploratory Factor Analysis

In order to examine the psychometrics for each of the measures, principle components analysis was used to extract factors for each of the individual measures. Based on this extraction, as well as the theorized structure, each measure was then looked at for potential modifications. In keeping with best practice guidelines for exploratory factor analysis set forth by Costello and Osborne (2005), items were expected to have communalities between .40 or higher. Furthermore, items were considered to be "crossloading" if the item loaded at .32 or higher on two or more factors. In that instance, the item was either dropped (for crossloading) or kept if it loaded greater than .60 on the correct factor and less than .40 on the others. Finally, factors with fewer than three items are generally considered unstable by Costello and Osborne (2005) and therefore were evaluated to consider whether they should be dropped.

Guidelines for acceptable alpha levels (reliability coefficients) were also taken into consideration for each overall measure and its subscales. DeVellis (2003) suggests the following ranges: between .60 and .65 is undesirable; from .65 to .70 is minimally acceptable; from .70 to .80 is respectable; between .80 and .90 is very good.

Value of Education. The Value of Education Scale was created to assess student's belief that both school and college were vital components to their future success. The scale was theorized to be made up of two factors, importance of school and importance of college. Principal components analysis revealed that two factors did exist, with all items loading on their hypothesized subscales. Table 1 shows that items 3, 4, 6, 7, and 10 loaded on factor 1

(importance of college) and items 1, 2, 5, 8, and 9 loaded on factor two (importance of school). Reliability analysis showed overall reliability for the scale which was very good (.91). In addition, reliabilities were also very good for the importance of college subscale (.90) and the importance of school subscale (.84). Therefore, no modifications were made to this measure.

A univariate Analysis of Variance (ANOVA) was also conducted to determine if there were any significant differences on the overall measure due to gender or race. Due to the large sample size, statistically significant Eta- squares were expected across a number of demographic characteristics, however, none of these differences were deemed practically meaningful to the researcher. The results (Table 2) indicate that there were no meaningful gender or race differences on the Value of Education Inventory; therefore any statistical significance was simply due to the large sample size.

Table 1
Exploratory Factor Analysis for the Value of Education Inventory

Component	1	2
q3	.853	.255
q4	.814	.318
q6	.711	.321
q7	.748	.386
q10	.804	.292
q1	.332	.657
q2	.323	.768
q5	.195	.712
q8	.308	.766
q9	.309	.736

Note. 1 = Importance of College; 2 = Importance of School

Table 2

Univariate Analysis for Value of Education Total Scale Score

Source	Type III SS	df	MS	F	Sig.	η^2
Gender	189.397	1	189.40	4.818	.028	.001
Race	846.610	5	169.322	4.307	.001	.005
Gender*Race	60.629	5	12.126	.308	.908	.000
Error	15138.64	3851	39.31			
Total	154377.97	3862				

Note. DV = Dependent Variable; SS = Sum of Squares; MS = Mean Square; η^2 = Eta Squared

Academic Self-efficacy. The Academic Self-efficacy scale was developed to assess students' beliefs in themselves to perform numerous tasks associated with school success. The original scale was believed to be made up of three factors: social, class, and test taking self-efficacy. Principal components analysis initially revealed five factors with eigenvalues above 1. However, upon closer inspection several items were noticed to be crossloading and were therefore dropped under the parameters listed above by Costello and Osborne (2005). All but one of these items fell under the hypothesized class and test taking subscales, making it probable that these two factors should actually be collapsed into one. A second analysis was then run and three more crossloading items were dropped. Two of these items were hypothesized to be social items but were asking about social confidence regarding talking with teachers (q12) and asking questions in class (q17), which were not surprisingly also measuring classroom confidence. Results from this initial principal components analysis can be seen in Table 3.

Table 3

Exploratory Factor Analysis for Self-Efficacy Inventory: Pre

	Components 1					Components 2		
	1	2	3	4	5	1	2	3
q11	.145	-.018	.709	.139	.073	-.026	.713	.131
q12	.693	.229	.138	.107	.034	.548	.421	-.038
q13	.538	.465	.037	.098	.108			
q14	.563	.254	.138	-.035	.228	.437	.331	.209
q15	.043	.220	.584	.099	.025	.132	.510	.113
q16	.442	.388	.013	.400	.083			
q17	.627	.134	.234	.251	.013	.453	.479	-.024
q18	.507	.086	.304	-.044	.194	.253	.489	.121
q19	.140	.468	.170	.475	.068			
q20	.223	.800	.122	.107	.056	.808	.070	.149
q21	.148	.681	.202	-.025	.240	.626	.082	.361
q22	.330	.154	.625	-.005	.184	.213	.635	.246
q23	.133	.216	.666	.102	.170	.173	.616	.240
q24	.216	.481	.153	.582	.079			
q25	.153	.122	.182	.059	.785	.135	.227	.782
q26	.526	.139	-.010	.157	.533			
q27	.062	.153	.184	.168	.782	.139	.198	.798
q28	.534	.162	.339	.280	.080			
q29	.272	.722	.184	.161	.126	.790	.162	.198
q30	.480	.417	.109	.475	-.004	.699	.327	-.045
q31	.062	-.034	.167	.755	.189			
q32	.411	.010	.443	.290	.111	.266	.621	.041

Therefore, after dropping the crossloading items, the final factor structure came out with the following three subscales: social self-efficacy, class self-efficacy and computer self-efficacy. Table 4 shows that 10 items make up the final version of the Academic Self-efficacy scale, with items 11, 15, 18, 22, and 23 loading on the social self-efficacy subscale, items 20, 21 and 29 loading on the class self-efficacy subscale and items 25 and 27 loading on a computer self-efficacy subscale. Reliability analysis showed very good reliability for the overall scale (.80). Additionally, reliabilities for each of the subscales were in the minimally acceptable to very good range, with reliability for the class self-efficacy being .79, for social self-efficacy being .69 and for computer self-efficacy being .67.

Univariate Analysis of Variance (ANOVA) was again conducted to determine whether significant differences existed on the overall measure for gender or race. While statistically significant differences were found across a number of demographic characteristics, none of these were at a level that was deemed meaningful. The results (Table 5) indicate that there were no meaningful gender or race differences.

Table 4

Exploratory Factor Analysis for Academic Self-Efficacy Inventory

Component	1	2	3
q11	.762	.867	.044
q15	.625	.154	-.008
q18	.502	.223	.140
q22	.616	.229	.252
q23	.674	.219	.176
q20	.155	.867	.044
q21	.169	.699	.229
q29	.216	.826	.129
q25	.177	.140	.829
q27	.167	.151	.827

Note. 1 = Social Self-Efficacy; 2 = Class Self-Efficacy; 3 = Computer Self-Efficacy

Table 5

Univariate Analysis for Academic Self-efficacy Total Scale Score

Source	Type III SS	df	MS	F	Sig.	η²
Gender	83.246	1	83.246	2.385	.123	.000
Race	1100.405	5	220.081	6.306	.000	.008
Gender*Race	302.466	5	60.493	1.733	.123	.002
Error	133188.55	3816	34.903			
Total	135268.44	3827				

Note. DV = Dependent Variable; SS = Sum of Squares; MS = Mean Square; η² = Eta Squared

   Relatedness. The Relatedness scale was constructed to help understand the relationships that exist between a student and their teachers, family, and peers. More specifically, it taps into a student's sense of support and belongingness. The scale therefore was expected to be made up of these three factors. Initial principal components analysis revealed four factors (Table 6), however, upon closer inspection all items loaded on their expected subscale except for the three items that were negatively worded (and thus reverse coded). Therefore, because these items were so highly correlated with one another they were dropped from the measure. Table 7 shows the final 13 items that make up the Relatedness scale, with items 40-44 making up the teacher relationships subscale, items 33, 34, 36, 38, and 39 making up the family relationships subscale, and items 45-47 making up the peer relationships subscale. Reliability analysis showed very good reliability for the overall scale (.84). Additionally, reliabilities for each of the subscales were in the respectable to very good range, with reliability for the teacher relatedness being .81, for peer relatedness being .77 and for family relatedness being .80.

Table 6

Exploratory Factor Analysis for Relatedness Inventory: Pre

Component	1	2	3	4
q33	.127	.771	.069	.151
q34	.202	.717	.118	.120
q35R	.056	.210	.035	.803
q36	.078	.679	.126	.084
q37R	.044	.273	.026	.801
q38	.188	.726	.111	.160
q39	.135	.627	.258	.082
q40	.755	.155	.059	.051
q41	.720	.146	.088	.043

q42	.777	.134	.072	.082
q43	.773	.182	.108	.016
q44	.679	.062	.068	-.058
q45	.131	.198	.701	.027
q46	.128	.188	.794	.003
q47	.109	.177	.825	.046
q48R	-.050	-.031	.595	.556

Note. q35R, q37R and q48R = Reverse coded item

Table 7

Exploratory Factor Analysis for Relatedness Inventory

Component	1	2	3
q33	.124	.788	.076
q34	.196	.734	.123
q36	.078	.673	.136
q38	.180	.746	.123
q39	.135	.634	.248
q40	.751	.180	.059
q41	.722	.152	.095
q42	.774	.159	.075
q43	.769	.190	.110
q44	.682	.032	.101
q45	.114	.185	.714
q46	.117	.155	.832
q47	.099	.174	.838

Note. 1 = Teacher; 2 = Family; 3 = Peer

Univariate Analysis of Variance (ANOVA) again found that no meaningful gender or race differences existed for the overall Relatedness measure (Table 8).

Table 8

Univariate Analysis for Relatedness Total Scale Score

Source	Type III SS	df	MS	F	Sig.	η^2
Gender	1366.641	1	1366.641	21.117	.000	.006
Race	820.146	5	164.029	2.535	.027	.003

Gender*Race	331.681	5	66.336	1.025	.401	.001
Error	242043.04	3740	64.72			
Total	246153.49	3751				

Note. DV = Dependent Variable; SS = Sum of Squares; MS = Mean Square; η² = Eta Squared

     Stress. The Stress scale was developed to measure the level of difficulty a student encounters with tasks relevant to their school life. Initially it was hypothesized to be made up of three subscales: academic stress, social stress, and financial stress. After running the initial principal components analysis, a three factor structure was revealed (Table 9). However, after closer analysis it became clear that all but two of the social stress items were crossloading on the academic stress factor. Conceptually, items loading on these two factors have content dealing with academic and social stress, however, it appears unlikely that social and academic stress can be separated out in high school students. Therefore, crossloading items were dropped, along with the final two social items and a two factor structure was deemed most appropriate. Table 10 shows the final measure with the 12 items that make up the Stress scale. Items 49, 51, 53, 58, 60, 67 and 68 make up the academic stress subscale, and items 62-66 make up the financial stress subscale. Reliability analysis showed very good reliability for the overall Stress scale at .89. Reliabilities for each of the subscales were also very good, with the reliability of academic stress being .85 and for financial stress .88.

Table 9

Exploratory Factor Analysis for Stress Inventory: Pre

Component	1	2	3
q49	.703	.125	.136
q50	.215	.146	.689
q51	.600	.129	.306
q52	.561	.104	.440
q53	.657	.093	.226
q54	.468	.099	.522
q55	.235	.292	.623
q56	.145	.314	.621
q57	.433	.233	.487
q58	.717	.207	.208
q59	.383	.214	.558
q60	.550	.209	.291
q61	.120	.461	.548
q62	.204	.738	.331
q63	.198	.714	.302
q64	.152	.777	.296
q65	.251	.770	.241
q66	.327	.743	.059

q67	.687	.331	.098
q68	.681	.274	.170
q69	.539	.320	.303
q70	.351	.267	.547

Table 10

Exploratory Factor Analysis for Stress Inventory

Component	1	2
q49	.715	.137
q51	.660	.208
q53	.694	.144
q58	.751	.222
q60	.610	.276
q67	.688	.297
q68	.705	.264
q62	.253	.798
q63	.240	.775
q64	.184	.837
q65	.255	.810
q66	.274	.733

Note. 1 = Academic Stress; 2 = Financial Stress

Again, Univariate Analysis of Variance (ANOVA) showed no meaningful gender or race differences on the overall Stress measure (Table 11).

Table 11

Univariate Analysis for Stress Total Scale Score

Source	Type III SS	df	MS	F	Sig.	η^2
Gender	49.557	1	49.557	.525	.469	.000
Race	5462.675	5	1092.535	11.579	.000	.015
Gender*Race	1211.066	5	242.213	2.567	.025	.003
Error	352972.61	3741	94.35			
Total	359865.47	3752				

Note. DV = Dependent Variable; SS = Sum of Squares; MS = Mean Square; η^2 = Eta Squared

Distress. The Distress scale was created to measure a student's amount of psychological or physically distressing symptoms. The scale was hypothesized to be made up of five factors which measured symptoms of agitation, eating problems, feeling blue, sleeping problems, and physical problems. Higher scores on this measure indicate a student has a greater level of distress. Principal components analysis did not reveal five factors, however, and instead found four factors to exist (Table 12). Upon closer analysis of the items, each of the physical well-being items was found to be crossloading across the four factors. Therefore, these crossloading items were dropped and the final scale was made up of items that fell on the remaining four factors. Table 13 shows the final Distress measure, which is made up of 15 items. Items 82, 85, 86, 87, and 93 make up the agitation subscale, items 71, 79, 89, and 91 make up the sleep problems subscale, items 77, 81, and 92 make up the eating problems subscale, and items 74, 75, and 78 make up the feeling blue subscale. Reliability analysis were then run for the overall scale and showed very good reliability (.93). Additionally, reliabilities for each of the subscales were all in the very good range, with reliability for the agitation subscale at .86, for sleep problems at .86, for feeling blue at .85 and for eating problems at .83. Univariate Analysis of Variance (ANOVA) again showed no meaningful gender or race differences on the overall Distress measure (Table 14).

Table 12

Exploratory Factor Analysis for Distress Inventory: Pre

Component	1	2	3	4
q71	.162	.754	.230	.114
q72	.593	.266	.333	.104
q73	.241	.228	.651	.257
q74	.399	.282	.685	.078
q75	.321	.214	.720	.177
q76	.169	.247	.534	.296
q77	.162	.190	.238	.776
q78	.263	.241	.758	.234
q79	.184	.751	.281	.159
q80	.235	.425	.272	.287
q81	.219	.179	.255	.762
q82	.543	.168	.294	.240
q83	.483	.435	.083	.196
q84	.351	.203	.307	.410
q85	.586	.141	.296	.281
q86	.715	.268	.274	.190
q87	.787	.192	.191	.218
q88	.450	.293	.158	.323
q89	.311	.780	.195	.179
q90	.379	.466	.255	.313

q91	.279	.739	.207	.243
q92	.325	.236	.121	.747
q93	.719	.268	.277	.163

Table 13

Exploratory Factor Analysis for Distress Inventory

Component	1	2	3	4
q82	.681	.201	.202	.156
q85	.655	.134	.240	.254
q86	.668	.281	.197	.316
q87	.805	.226	.207	.174
q93	.693	.292	.174	.299
q71	.147	.773	.149	.201
q79	.185	.768	.183	.264
q89	.321	.799	.183	.167
q91	.310	.749	.236	.171
q77	.167	.198	.809	.224
q81	.248	.180	.788	.216
q92	.337	.246	.752	.099
q74	.354	.289	.133	.739
q75	.278	.223	.207	.783
q78	.270	.249	.267	.758

Note. 1 = Agitation; 2 = Sleep Problems; 3 = Eating Problems; 4 = Feeling Blue

Table 14

Univariate Analysis for Distress Total Scale Score

Source	Type III SS	df	MS	F	Sig.	η^2
Gender	474.862	1	474.862	2.531	.112	.000
Race	8147.006	5	1629.401	8.686	.000	.012
Gender*Race	1370.626	5	274.125	1.461	.199	.002
Error	680976.12	3630	187.6			
Total	694187.62	3641				

Note. DV = Dependent Variable; SS = Sum of Squares; MS = Mean Square; η² = Eta Squared

     Autonomous Motivation. Because the self-determination literature maintains that two types of motivation actually exist and should not be considered additive of one another, a total motivation scale was not conceptualized in this study. Instead, items from the motivation scale (Appendix F) were divided onto their appropriate motivation construct. The Autonomous Motivation scale was developed to measure a student's level of engagement in a behavior out of personal choice or interest. This measure was hypothesized to contain two factors, named identified and intrinsic motivation. Principal components analysis revealed that two factors did exist, with all 7 items loading on their hypothesized subscales (Table 15). Items 102, 97, 107, and 106 loaded on factor 1 (identified motivation) while items 94, 99, and 105 loaded on factor 2 (intrinsic motivation). Reliability analysis found the overall reliability for the scale to be very good (.89). Reliabilities for the two subscales were also in the very good range at .88 for identified motivation and .79 for intrinsic motivation. Therefore, no modifications were necessary for this measure. Univariate Analysis of Variance (ANOVA) again showed no meaningful gender or race differences on the overall Autonomous Motivation measure (Table 16).

Table 15

Exploratory Factor Analysis for Autonomous Motivation Inventory

Component	1	2
q102	.719	.340
q97	.821	.191
q107	.860	.265
q106	.828	.303
q94	.300	.810
q99	.178	.882
q105	.492	.624

Note. 1 = Identified Motivation; 2 = Intrinsic Motivation

Table 16

Univariate Analysis for Autonomous Motivation Total Scale Score

Source	Type III SS	df	MS	F	Sig.	η²
Gender	324.615	1	324.615	8.429	.004	.002
Race	4592.814	5	918.563	23.851	.000	.030
Gender*Race	300.592	5	60.118	1.561	.168	.002

Error	144769.64	3759	38.51
Total	151948.31	3770	

Note. DV = Dependent Variable; SS = Sum of Squares; MS = Mean Square; η² = Eta Squared

  Controlled Motivation. The Controlled Motivation measure was created to look at how much a student's choices involve making decisions based on guilt or external pressures. This measure hypothesized that two components make up controlled motivation, introjected and external motivation. Principal components analysis revealed two factors existed (Table 17), however, one of the eight items that concerned an extreme form of external motivation (so I can make lots and lots of money) did not load on the correct factor. With this item dropped, all of the remaining 7 items loaded on their hypothesized subscales (Table 18). Items 95, 98, 101, and 104 loaded on introjected motivation while items 100, 103 and 108 loaded on external motivation. Reliability analysis for the overall scale was found to be slightly lower (.68), but still in the minimally acceptable range. Reliability for introjected subscale was better .70, though for the external motivation subscale it was lower at .56. While these levels could be considered unacceptable for some types of analyses, because this study will be using the measures in a structural model they are considered acceptable. It should be noted that while it is not unusual to see published scales with lower alphas, modifications of the items may be advisable for future studies in order to increase the reliability of this measure. Univariate Analysis of Variance (ANOVA) again showed no meaningful gender or race differences on the overall Controlled Motivation measure (Table 19).

Table 17

Exploratory Factor Analysis for Controlled Motivation Inventory: Pre

Component	1	2
q103	.234	.719
q108	-.159	.734
q96	.550	.075
q100	.286	.684
q98	.747	.143
q101	.742	.236
q95	.595	.156
q104	.706	-.116

Table 18

Exploratory Factor Analysis for Controlled Motivation Inventory

Component	1	2
q95	.597	.157
q98	.772	.135
q101	.770	.232
q104	.707	-.112
q100	.296	.682
q103	.242	.717
q108	-.181	.742

Note. 1 = Introjected Motivation; 2 = External Motivation

Table 19

Univariate Analysis for Controlled Motivation Total Scale Score

Source	Type III SS	df	MS	F	Sig.	η²
Gender	.087	1	.087	.003	.955	.000
Race	312.319	5	62.464	2.266	.045	.003
Gender*Race	37.857	5	7.571	.275	.927	.000
Error	101698.13	3689	27.57			
Total	102059.76	3700				

Note. DV = Dependent Variable; SS = Sum of Squares; MS = Mean Square; η² = Eta Squared

Confirmatory Factor Analysis

Once exploratory factor analysis was run for each of the measures, the second half of the data set was utilized for confirmatory factor analysis. Each of the 74 items on the 18 subscales described above was allowed to be freely estimated under its hypothesized indicator. The results of the confirmatory factor analysis revealed fit indices that can be found in Table 20.

Table 20

Summary of Fit Indices for Confirmatory Factor Analysis

Model	CFI	RMSEA	SRMR	X²	df
CFA	.92	.035	.04	8309.503	2474

Note. CFA = Confirmatory Factor Analysis; X^2 = Chi-square

Established measures of fit were included in this analysis, including model chi-square, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Standard Root Mean Square Residual (SRMR). Kline (2005), in his review of the literature, describes these as the most common fit statistics that are reported for model fit testing. The model chi-square measures the null hypothesis that the model is a good fit for the data; therefore, a non-significant chi-square is evidence of good fit. However, Kline (2005) also reports there are numerous problems associated with using only the chi-square, including that it is heavily influence by large sample sizes and thus is likely inaccurate in these cases. RMSEA takes into account error in the population and the sample, and thus is not as heavily influenced by sample size at the chi-square. RMSEA, like the chi-square, is considered a 'badness of fit' statistic because smaller values indicate better fit. Generally, RMSEA indices less than .05 indication close fit, values between .05 and .08 indicate moderate fit, and values over .10 indicate poor fit (Kline, 2005). The CFI compares the hypothesized model with a null model which assumes no covariance among the population parameters. CFI values over .90 are considered a sign of good fit. Finally, SRMR measures the difference between the observed and expected correlations between the variables. Kline (2005) notes that SRMR values of .05 or less indicate good fit, less than .08 indicate fair fit and > .1 are unacceptable. Thus, all three indices which are appropriate for use with this sample indicated a strong fit for the factor structure proposed in the confirmatory factor analysis.

<div align="center">Validity Study</div>

Evidence of construct validity was then explored after confirmatory factor analysis showed good fit for the measurement model. Both convergent and discriminant validity were tested using a second sample of students.

Participants and Procedure

A random sample of 300 students was utilized for this validity study from an overall sample of 2,512 students from 14 schools across the USA. Demographic data for gender and race was available for all 300 students and included 54% female and 46% male. Participants reported their race as 49.7% White, 27.3% African American/Black, 3.3% American Indian, 2.3% Asian/Pacific Islander, 16% Hispanic and/or Latino/a, and 1.3% as multiethnic. Data collection for this sample took place through an online survey that students completed as part of a larger

study to understand how Individualized Learning Plans help students make successful post-secondary transitions.

Instruments

For this validity study a subset of the instruments given to these students were utilized. Four of the six instruments given to students in the overall study were utilized (Relatedness, Stress, Academic Self-efficacy and Motivation), along with two new instruments (Career Search Self-efficacy and Goal Setting). Because a majority of the instruments have already been described, only the two new instruments will be explained in greater detail below.

Career Search Self-efficacy. The Career Search Self-efficacy scale (CSES; Solberg et. al, 1994) is a 34 item measure that assesses a student's perceived confidence that they can perform tasks related to the career search. Students rate their confidence from not at all confident to extremely confident, with higher scores indicating a greater belief in one's self to perform specific career tasks. The CSES is comprised of five subscales: Self-Management, Career Planning, Career Awareness, Interviewing, and Networking, with a total scale reliability of .97.

Goal Setting. The Goal Setting measure (Howard, 2009) consists of 19 items and evaluates the degree to which students actively select and establish goals, identify challenges which may impede them in reaching their goals, and optimize their learning experiences to better reach their goals. Students respond to statements based on their level of agreement from strongly disagree to strongly agree. The Goal setting measure is comprised of three subscales: Goal Setting and Pursuit, Use of Resources, and Challenges, with a total scale reliability of .95.

Hypotheses

The overall hypotheses for the relationships between the measures can be found in Table 21. Of most important note are the measures that are expected to correlate most highly together: Academic Self-efficacy with Career Search Self-efficacy and Autonomous Motivation with Goal Setting.

Table 21

Hypothesized Correlations Among Inventories

	AutoMot	ContMot	GoalSet	AcadSE	CSES	Stress	Relate
AutoMot	_	neg med	pos high	pos med	pos med	neg low	pos med
ContMot		_	neg low	neg low	neg low	pos low	neg low
GoalSet			_	pos	pos	neg	pos

	med	med	low	med
AcadSE	_	pos	neg	pos
		high	med	med
CSES		_	neg	pos
			low	med
Stress			_	neg
				low
Relate				_

Note. AutoMot = Autonomous Motivation; ContMot = Controlled Motivation; GoalSet = Goal Setting; AcadSE = Academic Self-Efficacy; CSES = Career Search Self-Efficacy; Stress = Stress; Relate = Relatedness; Neg = Negative; Pos = Positive; Med = Medium

Results

Results from the validity study looking at the four resiliency measures (Motivation [Autonomous and Controlled], Academic Self-efficacy, Stress, and Relatedness) against the CSES and the Goal Setting measures can be found in Table 22. In most cases, correlations between the measures were in the expected direction and of the expected magnitude. Specifically, the correlation between Autonomous Motivation and Goal Setting was significantly positive and high (.633). Additionally, neither scale correlated as highly with any other measure (suggesting discriminant validity). Furthermore, the correlation between the Academic Self-efficacy scale and the Career Search Self-efficacy scale was also significantly positive and high (.667), suggesting good convergent validity.

Table 22

Correlations Among Inventories

	AutoMot	ContMot	GoalSet	AcadSE	CSES	Stress	Relate
AutoMot	_	-.066	.633**	.474**	.364**	-.240**	.488**
ContMot		_	.221**	-.105	-.098	.203**	-.114
GoalSet			_	.408**	.487**	-.097	.457**
AcadSE				_	.667**	-.357**	.539**
CSES					_	-.260**	.545**
Stress						_	-.36**
Relate							_

Note. AutoMot = Autonomous Motivation; ContMot = Controlled Motivation; GoalSet = Goal Setting; AcadSE = Academic Self-Efficacy; CSES = Career Search Self-Efficacy; Stress = Stress; Relate = Relatedness. **p < .01

Two of the instruments from the larger study were not included in this validity study. First, Value of Education was not included as it is a newly developed instrument and thus was not given to this set of students. Additionally, the Distress measure was not included as it has already been shown to have strong convergent validity with the College Distress Inventory (CDI; Ryan, Hanin, & Solberg, 1994). Solberg (1999) found that both instruments revealed a four factor structure (agitation, sleeping difficulties, eating problems and feeling blue) and were highly correlated (> .6**).

Structural Equation Models

Three sets of hypotheses were presented and evaluated using structural equation modeling. The models included one exogenous variable (relatedness) and five or six endogenous variables (Model 1: autonomous motivation, external motivation, academic self-efficacy, distress, and value of education; Models 2 and 3: autonomous motivation, external motivation, academic self-efficacy, distress, value of education, and stress). Upon running the first model, due to the model being unable to converge, the controlled motivation construct was modified to include only external motivation (introjected motivation was dropped). This was likely due to the reliability being low for the subscales on the controlled motivation measure and therefore was necessary in order to run the models. Furthermore, although it was originally planned that clustering analysis would be used in order to take into account the fact that students are nested within different schools, it was not possible to use this type of analysis with Model 3 (due to the inclusion of a moderator). For this reason, analyses were run for Models 1 and 2 using both clustering analysis and then without clustering. The results showed that the models did not significantly differ when the clustering commands were used and therefore they were left out of all models for consistency.

Model 1

Because Model 1 hypothesized that a meditational effect would exist between autonomous motivation and distress through self-efficacy, a model was first run that did not include self-efficacy. In following Holmbecks (1997) guidelines for testing meditational effect in structural equation modeling, the direct path between autonomous motivation and distress must first be found significant when the mediator is not in the model. This model was run in Mplus 4.2 (2006) and found to have good fit. Additionally, it found that the path between autonomous motivation and distress was significant. Model 1 (Figure 1) was then run to determine whether there were indirect effects between autonomous motivation and distress. The results for Model 1's fit can be seen in Table 23. The model found that there was a significant indirect effect when self-efficacy was included, thus making full mediation likely. Therefore, the model was rerun a final time with the direct path from autonomous motivation and distress constrained to zero. Results from this model can be found in Table 23 under Model 1 Mediated. The final step was to compare the chi-square difference between the original Model 1 and the Model 1 Mediated. If a meditational effect did exist then the constrained model should not have improved the model fit. Model chi-square was computed using the scale correction factor (due to Maximum Likelihood Regression) and found to not result in an improved model fit. Therefore, it was determined that full mediation was occurring between autonomous motivation and distress through self-efficacy.

The results of the mediated Model 1, along with regression coefficients can be found in Figure 4. The model was found to have fair to good fit. Figure 4 shows that consistent with the literature, relatedness directly predicted autonomous motivation but did not directly predict external motivation. Further, autonomous motivation did predict value of education in the direction hypothesized, as well as academic self-efficacy. As predicted, academic self-efficacy did predict both distress and value of education in the hypothesized directions. External motivation also predicted distress, as well as academic

Table 23

Summary of Fit Indices for Structural Models

Model	CFI	RMSEA	SRMR	X²	df	Adjusted ΔX²	Δdf	z test
Model 1	.90	.065	.065	2211.90	62			
Model 1 mediated	.88	.062	.065	1957.27	61	.33	1	
Model 2	.90	.064	.071	2789.63	69			
Model 2 mediated	.90	.064	.071	2788.34	68	.62	1	
Model 3					69		1	-3.47**

Note. **p < .01

Figure 4. Model 1 Results with Mediation
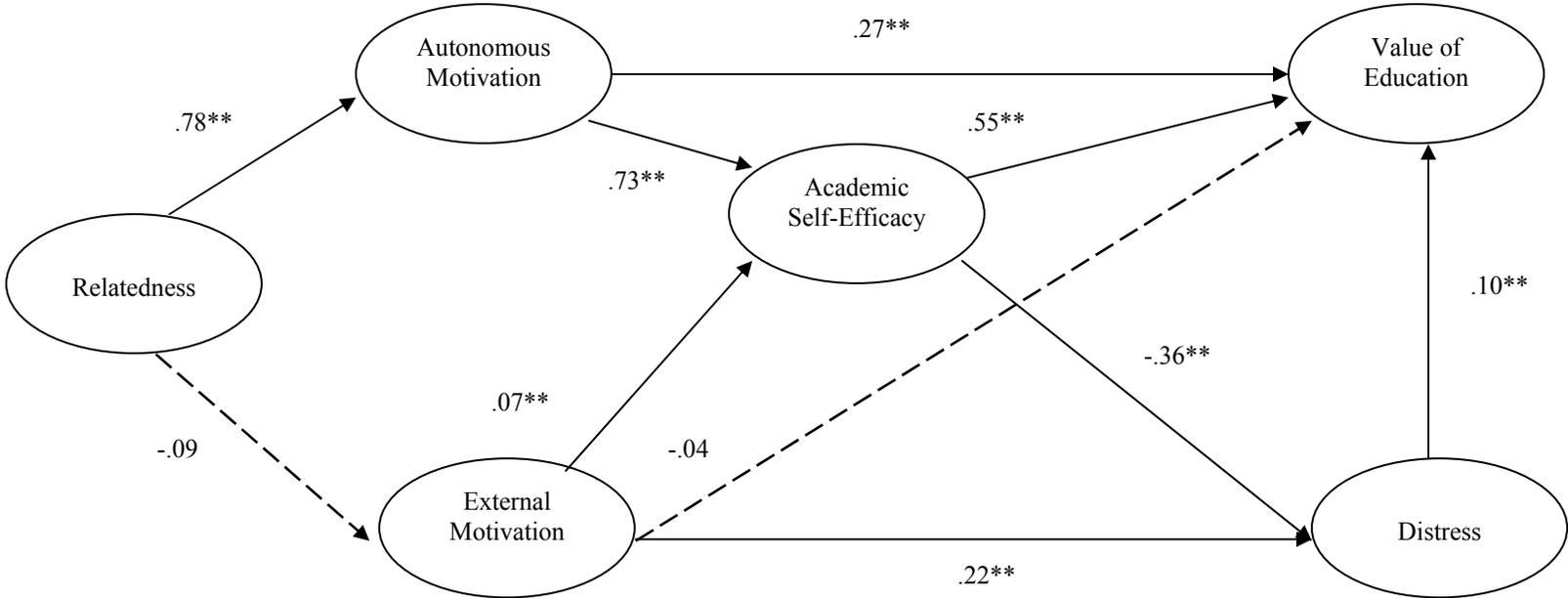
self-efficacy (though not in the expected direction). Finally, distress significantly predicted value of education, though not in the hypothesized direction.

Model 2

Model 2 was then run with the inclusion of a sixth endogenous variable, stress. The original hypothesized model and direction of path coefficients can be found in Figure 2. Because this model also contained a possible mediation effect from self-efficacy to distress through stress, and because the path from self-efficacy to distress was significant in Model 1, indirect effects were assessed. The analyses again found that there was a significant indirect effect when stress was included, thus making full mediation likely. Therefore, the model was rerun a final time with the direct path from self-efficacy to distress constrained to zero. Results from this model can be found in Table 23 under Model 2 Mediated. Chi-square differences were then compared between the original Model 2 and the Model 2 Mediated. In order to show a meditational effect, the constrained model could not be found to improve the model fit. Model chi-square was computed using the scale correction factor (due to Maximum Likelihood Regression) and again found that the model fit did not improve. Therefore, it was determined that full mediation was occurring between self-efficacy and distress through stress.

The results of the mediated Model 2, along with regression coefficients can be found in Figure 5. Results for the Model 2 fit can be seen in Table 23 and again indicate fair to good fit. More specifically, the path between relatedness again directly predicted autonomous motivation. Additionally, unlike Model 1, the direct path from relatedness to external motivation was now found to be significant. Further, autonomous motivation again predicted value of education and academic self-efficacy in the hypothesized

*Figure 5.* Model 2 Results with Mediation
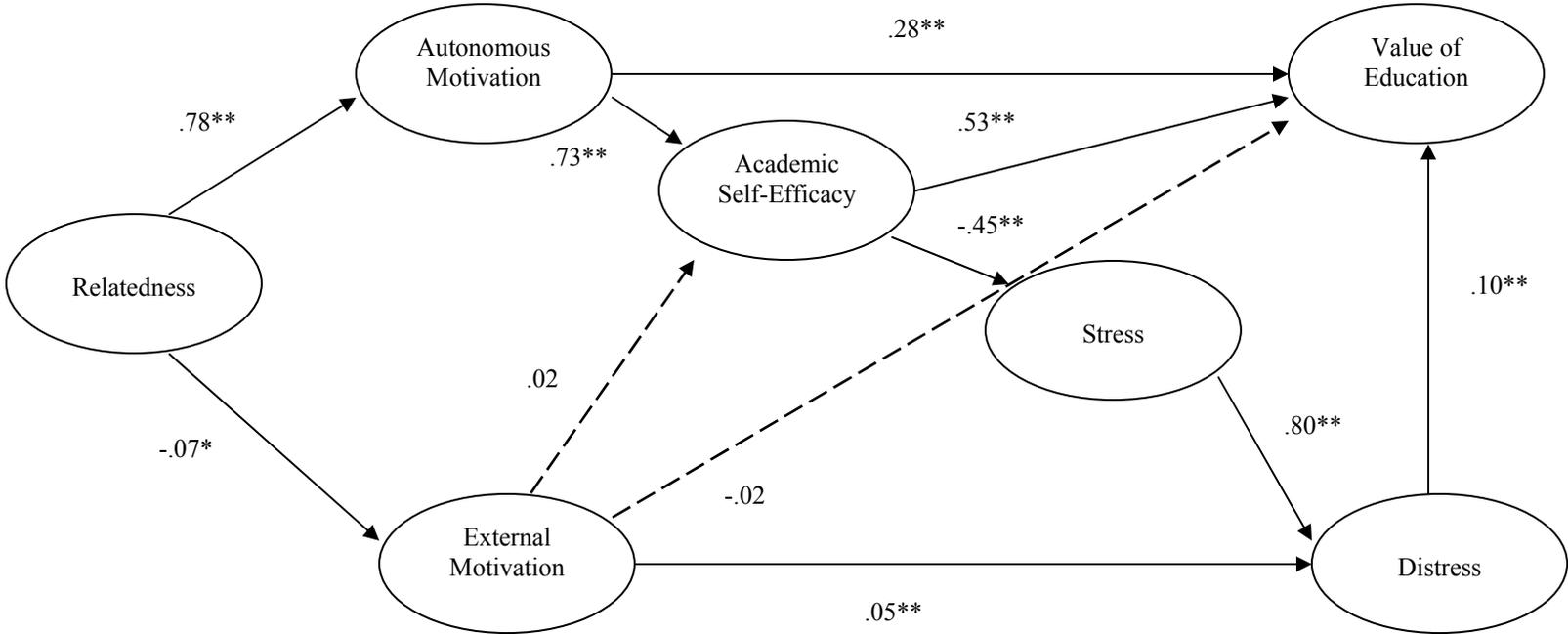
directions. Academic self-efficacy then significantly predicted value of education and stress. External motivation was again unable to predict value of education and was also unable to predict academic self-efficacy. However, it was able to significantly predict distress in the hypothesized direction. Stress was also able to predict distress significantly. Finally, distress again significantly predicted value of education, though not in the hypothesized direction.

Model 3

The final model (Model 3) included the addition of a moderator, relatedness, on the path between stress and distress. The original hypothesized model and direction of path coefficients can be found in Figure 3. Results for the model fit can be seen in Table 23 but are different from the typical fit indices referred to above. Specifically, there are no overall model fit statistics available when a latent variable interaction is specified, as these have not yet been created for MPlus. Therefore, the differences between Model 2 and 3 fit cannot be determined. However, a z test for the interaction term's slope can be run, and if significant this indicates the new hypothesized path is a moderator. As Table 23 indicates, the z score was significant at the .01 level, indicating that a moderation effect was taking place. Additionally, the same paths that were significant in Model 2 were also found to be significant in Model 3, along with the addition of the moderation path. The results for Model 3, along with the unstandardized regression coefficients can be found in Figure 6.

Figure 6. Model 3 Results
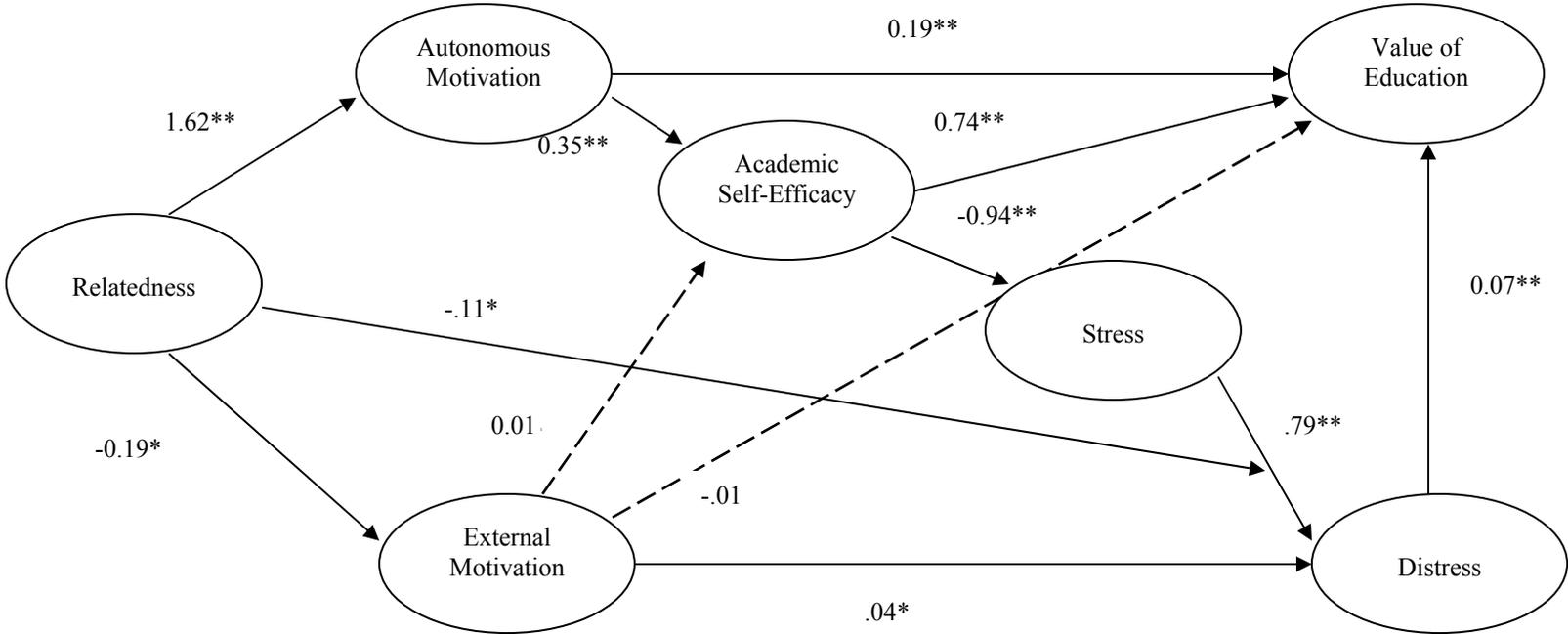
CHAPTER V

Discussion and Conclusions

This study sought to create a model of resiliency constructs that best depicts how adolescents' level of distress and value for education can be predicted. Using path analytic techniques it was able to paint a clearer picture of the relationships among constructs from three separate literature bases: social-cognitive theory, self-determination theory, and diathesis stress models. By combining constructs from these three important theories that have each offered a piece of the explanation, this model was able to begin explaining how student outcomes can be improved in the face of adversity. Furthermore, it used a very large, ethnically diverse sample of adolescents to allow for greater generalizeability of the results.

More specifically, the results of this study indicated that a model which includes the constructs of relatedness, autonomous and controlled motivation, academic self-efficacy, and stress can contribute to an explanation of students' level of distress and value of education. The study hypothesized three models, each of increasing complexity, and sought to determine which model could best predict the relationships among these constructs. The first model was created to replicate findings from a study by Close and Solberg (2008), which integrated constructs from social-cognitive and self-determination theories. However, because it was hypothesized that this model was missing several key constructs and indicators, two other models were also run. The second model included the important construct of stress and looked at its role in predicting distress/value of education. The results indicate that this model offered commensurate fit for the data and better support for several of the hypothesized paths, thus offering a stronger explanation for the relationships among the resiliency constructs. Finally, a third model was run to include the role of relatedness as a moderator on the relationship between stress and distress. Results indicated that its inclusion in the model resulted in a noteworthy effect. Further, all significant relationships among the constructs remained the same as those in the model without the inclusion of the moderator. Because Models 2 and 3 found fair to good fit for the data and resulted in the closest fit for to the initial hypotheses, the remaining discussion will focus on implications that can be drawn from their results.

First, as predicted, students who reported stronger relationships with their teachers, peers, and family had higher levels of autonomous motivation and lower levels of external motivation. These results were in line with those found by studies in the self-determination literature (Ryan & Deci, 2000; Ryan, 1995), which have shown that autonomous motivation is more likely to flourish through interpersonal relations that offer security and relatedness throughout the lifespan. Further, a recent structural model created by Patrick, Ryan, and Kaplan (2007) also found that having strong relationships with teachers and peers could directly impact students' mastery goals (or belief in learning because it is enjoyable/valuable). Close and Solberg (2008) also found a relationship in their structural model between relatedness and autonomous motivation, though they were unable to show a relationship with controlled motivation. This could be due to the fact that their study only looked at relationships with teachers, whereas the current study expanded the relatedness construct to include teachers, peers, and family relationships.

The role of relatedness and its effect on the relationship between stress and distress was also very interesting in this study. More specifically, in students who reported having higher levels of relatedness, stress had less of an effect on their overall distress level. Put more simply, relationships protected or buffered students from the effects of stress. This result has also found support in the literature. For example, Cohen and Wills (1985) conducted a meta-analysis and found evidence in numerous studies which showed a buffering effect from social support on overall well-being. Furthermore, a recent study by Howard, Budge, and McKay (2010) found that when students were exposed to violence, those who had family and peer support were protected from experiencing higher levels of distress. While this study focused on only one type of stress, namely community violence, it offered strong support for the importance of relationships acting as a buffer on students' level of distress.

Next, the models looked at the relationships between autonomous and controlled motivation on value of education. These hypotheses were somewhat exploratory in nature due to the fact that few studies could be found to support that these relationships might exist. Somewhat similarly, a study by Hufton, Elliott, and Illushin (2002) found that students who endorsed more intrinsic or autonomous views for their education were more likely to endorse the importance of working hard in school. Results from the current study indicated that, as expected, a positive relationship did exist between autonomous motivation and value for education. This result is in line with a study by Vallerand, Fortier, and Guay (1997) that found students who were self-motivated were less likely to drop out of school. However, the relationship between controlled motivation and value of education was not well demonstrated. The low correlation between these constructs could be due to them not actually being related. However, it could have also resulted from the controlled motivation construct not being as thorough as the other constructs in the model and therefore unable to detect this relationship.

The next set of results showed a relationship existed between autonomous motivation and self-efficacy. However, the relationship between controlled motivation and self-efficacy was not well demonstrated. Because these paths combine constructs from both self-determination and social-cognitive theories, little research can be found that has dealt with the combination of these specific constructs. For example, studies by Deci, Nezlek, and Sheniman (1981) and Ryan and Grolnick (1986) found that children who experienced greater autonomous support perceived their academic competence and self-esteem to be higher. Noom, Dekovic, & Meeus (1999) also found that students higher in autonomous support were more likely to have high self-esteem. However, while important, each of these studies measured only cognitive competence or self-esteem, which is different than the conceptualization of self-efficacy today. Close and Solberg (2008) attempted to look at the combination of these theory's constructs but only found support for the relationship between autonomous motivation and self-efficacy. Therefore, either no relationship exists between controlled motivation and self-efficacy, as consistent with previous literature that has focused solely on the relationships with autonomous motivation, or this hypothesis needs to be further explored using alternative methods for measuring controlled motivation.

The results relating controlled motivation to distress were also consistent with the literature which has shown that students who endorsed a controlled motivational style were found to have greater levels of anxiety (Ryan & Connell, 1989). Additionally, the results follow

those found by Walls and Little (2005) who reported that students endorsing controlled forms of motivation had significantly higher amounts of negative affect.

The results relating autonomous motivation to distress and academic self-efficacy to distress are perhaps some of the most interesting in this model as they were both found to take place through other constructs. Model 1 first confirmed that the path from autonomous motivation to distress became less important when self-efficacy was placed in the model (See Figure 4). After completing a test of the potential mediation effect, it was found that the relationship between these variables was taking place through self-efficacy. This was consistent with results found by Close & Solberg (2008). However, it was the addition of stress to the path model that led to the most interesting finding. In Model 2, stress was introduced as a potential mediator between academic self-efficacy and distress. After testing the original Model 2, along with the mediated model, it was found that the relationship between these constructs took place through stress (See Figure 5). This finding was important as past studies have only looked at the direct effects of self-efficacy on distress, without considering the important role that stress might play. For example, Bandura, Pastorelli, Barbaranelli, & Caprara (1999) found that higher self-efficacy led to lower levels of depression while Muris (2002) found that higher self-efficacy led to lower levels of anxiety disorders and depression. The current study, however, found the effect of academic self-efficacy on distress to take place through stress, offering important implications for both researchers and interventions.

Additionally, the relationships between academic self-efficacy and distress on value of education require further discussion. While it was expected that higher levels of distress would lead to lower value for education, the opposite appeared to be true in the model (instead, a positive relationship was found). This was somewhat perplexing after looking at the correlations between the subscales for distress and value of education which showed negative correlations. Therefore, the possibility of a suppressor effect was considered. Suppression is said to take place when the relationship between two independent variables is hiding or suppressing the true relationship that each variable has with the dependent variable (i.e. value of education) (Cohen & Cohen, 1983). There were several possible independent variables that could have been causing this suppression to take place, and that if controlled for would allow the true relationship between distress and value of education to be present. Because the models with and without stress were both found to result in a positive relationship between distress and value of education, it was clear that stress was not suppressing this relationship. Instead, a model was run to look at the results when both stress and self-efficacy were left out. Results indicated that when self-efficacy was also left out of the model that the relationship between distress and value of education was in the expected direction. For this reason, self-efficacy was found to be suppressing the relationship between distress and value of education. This type of suppression, named net suppression is explained by Hicks and Patrick (2006) to occur when "the beta coefficient of the initial predictor reverses sign, whereas the beta coefficient for the suppressor variable increases relative to its initial validity coefficient" (p. 279). Therefore, distress actually enhances the predictive validity of academic self-efficacy on value of education, while the path between distress and value of education becomes less important in its predictive capabilities when academic self-efficacy is included in the model.

Finally, the overall models showed fair to good fit, thus indicating that the proposed relationships between the constructs may be helpful in beginning to understand important student outcomes.   More specifically, the results of Model 2 were able to account for 54% of the variance in students' Value for Education scores, thus indicating that a large portion of variance was able to be explained by the constructs in the model.

Limitations of the Study

As with all research, this study had several limitations which should be noted. First, although SEM is considered a large-sample technique, it is also possible that with a very large sample size that some results may be statistically significant but not meaningful to the researcher. Indeed, many of the results from the Univariate Analysis of Variances (ANOVA) that were run on the measures in this study found statistically significant differences due to race or gender. However, due to the large sample size it was determined that only differences accounting for 4% or more of the variance would be deemed meaningful for the sample. This limitation should also be taken into account when looking at significant path coefficients in the models and determining whether the strength of the relationship between constructs is meaningful. While all significant path coefficients were above 4%, several were rather small and thus not as informative.

A second weakness for this study involves the survey design. Because each of the instruments used in this study were self-report measures, the results should be viewed as subjective. Additionally, only students completed these measures, making it possible that their viewpoints could be different from those of a teacher, parent, etc. For this reason, future studies should consider including multiple methods for sampling constructs that include teacher or even parent report measures or observations.

Third, another survey design weakness involved the controlled motivation measure. Exploratory factor analysis found this instrument's reliability to be below the desired level for a valid instrument. For this reason, one of the subscales needed to be removed in order for the structural models to converge, making this latent construct less comprehensive then others in the model. Future studies should consider modifying the items of this measure so that they more accurately capture the construct, as well as potentially adding additional items or measures so that there is a greater likelihood the items will correctly measure the construct.

A final limitation of this study is that the results of these models are unable to prove causation. Although the results showed that several of the models fit the data well, failure to reject a path model does not automatically prove that it is correct (Kline, 2005). To infer causation requires a great deal more than just an acceptable correspondence of the model to its dataset. It is with strong theoretical backing that one can begin to infer causation from correlations; however it is still not possible to prove that this is the only model which would correctly fit the data.

Strengths of the Study

This study also offers several important strengths that should be discussed. First, the sample utilized in this study was very large and diverse. Specifically, the ethnic make-up of students in this sample closely modeled those reported by the U.S. Census Bureau in 2008. In addition, the sample was nearly equal parts male/female, allowing for greater generalizeability to all adolescents.

Second, because this study utilized structural equation modeling (SEM) it has several inherent strengths. For example, SEM is considered an a priori method, meaning that the relationships between the variables, as well as their directions must be specified before the model can be evaluated. In a sense then, SEM can be considered a confirmatory approach, wherein the results answer whether the hypotheses are supported by the data. Additionally, SEM offers researchers the ability to test hypotheses at a much higher level of abstraction by allowing latent variables to be entered into the models. Latent variables are not directly measured but instead created by incorporating several measured variables into one construct. Specifically, this allows the researcher to explicitly capture any unreliability of measurement that takes place within the model, thus allowing the latent variable to be more accurately estimated. Finally, SEM places greater emphasis on the whole model, rather than individual hypotheses, which have historically been over relied on in behavioral science research (Kline, 2005).

Another major strength of this study was that it was able to combine three disparate literature bases into one model that did not fall apart. In fact, the frameworks from these literatures appear to fit fairly well with one another and thus lead to several critical implications.

Implications and Future Research

The role of stress in leading to higher levels of psychological distressing symptoms was a key finding in this study. The fact that stress also served as a mediator between academic self-efficacy and distress has important implications for interventions. These results could not be timelier given that recent research has found high schools students to be reporting increased levels of psychopathology, beginning in at least mid-adolescence (Twenge, 2010). For this reason, interventions aimed specifically at decreasing the level of stress in adolescents' lives are critical.

One model that offers a good starting point for the design of interventions is the Conservation of Resources perspective put forth by Hobfoll (1989). The basic tenet of Hobfoll's work is that all persons strive to build up, protect, and retain resources. Resources can include personal characteristics such as self-efficacy or resourcefulness, conditions such as socioeconomic status, or energies such as mastery that a person strives for. Furthermore, it is the potential or actual loss of these resources that is considered to be the most threatening to a person. Stress then is said to result when there is threatened loss of resources, when there is an actual loss of resources, or when there is no resource gain after a person has invested a great deal of time and energy. Hobfoll's model offers the implication that if students are able to develop a surplus of resources that they will be more likely to experience positive well-being and ward off the effects of stress. This is important information as it points out the need to involve all students, regardless of their current level of resources, in interventions that focus on building up resiliency resources/characteristics.

In fact, studies such as one by Cohen and Wills (1985) have shown that the resource of social support can be very effective in protecting students from the effects of stress. In addition, while many studies have focused on the roles of teacher and peer relationships, the current study expanded the understanding of this construct by including family relatedness. Studies such as the one conducted by Sheldon (2007), which evaluated the effectiveness of a school-wide intervention that worked to increase family partnerships within the school, have found that stronger family relationships can greatly benefit students. Using a framework designed by Epstein (2001), the study looked at schools which conducted activities to help improve parenting skills, aided parents in working together with their children at home, recommended parents volunteer within the school, and helped parents to collaborate with members of the community. This model of family involvement and relationship strengthening is one that could be advantageous to many schools and could lead to greater relationship resources for students everywhere.

Another resource that the model found to be effective in decreasing stress and its subsequent relationship on psychological distress was self-efficacy beliefs. Self-efficacy beliefs have been shown in numerous studies to result in improved student outcomes (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Moeini, Shafii, Hidarnia, Babaii, Birashk & Allahverdipour, 2008; Muris, 2002) and the increased capacity to resist stress (Schwarzer & Jerusalem, 1995). For this reason, it is critical that intervention programs work to increase this valuable resource.

According to Bandura (1997), self-efficacy beliefs can be strengthened most effectively through opportunities where students are able to experience personal performance accomplishments. For a student low in social self-efficacy this might mean becoming involved as a member of a teen group that is doing projects within the school. For a student low in academic self-efficacy this could be learning to give a speech, through weekly practice sessions with a mentor, and then finally standing up and giving it in front of the entire class. It is through these repeated personal exposures and actually challenging oneself to participate in these mastery experiences that self-efficacy can also begin to be generalized to other life situations (Bandura, 1977).

Furthermore, interventions geared specifically at reducing stressors that effect adolescents on a persistent, daily basis are also necessary. One such program, designed by Hains and Szyjakowski (1990), examined the effectiveness of a cognitive intervention in helping adolescents learn to cope with stress. They found that the youth who were taught cognitive stress reduction strategies were able to significantly reduce their anxiety and anger. Furthermore, they stressed the importance of creating interventions which are focused on the specific stressors faced by adolescents, such as academic/peer pressures and parental expectations. The current study also pointed out the need to look at financial stressors that may be affecting adolescents and incorporating these into interventions.

Finally, because this study was the first of its kind to utilize the outcome variable value of education in a structural model, it would be important to replicate the findings of its relationships with the other constructs again. In addition, although measuring value of education offers researchers a more consistent and less muddy construct then retention or drop-out rates, it would

be helpful to better understand the role that value of education has in predicting these and related constructs.

Concluding Remarks and Next Steps

Overall, this study demonstrated that constructs from three separate and disparate literature bases can be combined into one model to begin to explain how important adolescent outcomes can be improved. Using path analytic techniques it depicted the relationships among constructs from social-cognitive theory, self-determination theory, and diathesis-stress models. Important implications that were drawn included the need to design interventions that focus on affecting the roles of stress and relationships in adolescence, which served as mediators and moderators on distress level. Furthermore, it highlighted the importance of working to increase a wide variety of resiliency skills, simultaneously.

The next steps for utilizing these results would be to possibly conduct comparison studies looking at the differences or similarities between these constructs and those in adolescents with chronic medical conditions or specific learning disabilities. Furthermore, it would also be interesting to attempt to replicate the findings from this study while also including other relevant adolescent outcomes, such as post-graduation success or college success.

References

21st Century Skills (2006). Are They Really Ready to Work: Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce. Retrieved July 14, 2008 from http://www.21stcenturyskills.org/documents/final_report_pdf09-29-06.pdf.

Anderman, E. M. (2002). School effects on psychological outcomes during adolescence. *Journal of Educational Psychology, 94*(4), 795-809.

Anderman, L. H., & Kaplan, A. (2008). The role of interpersonal relationships in student motivation: Introduction to the special issue. *Journal of Experimental Education, 76*(2), 115-119.

Bandura, A (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.

Bandura, A (1986). *Social foundations of thought and action: A social cognitive theory.* Engelwood Cliffs, NJ: Prentice Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York, NY: Freeman.

Bandura, A., Pastorelli, C., Barbaranelli, C. & Caprara, G. V. (1999). Self-efficacy pathways to childhood depression. *Journal of Personality and Social Psychology, 76*(2), 258-269.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*, San Antonio, TX: The Psychological Corporation.

Blum, R. (1998). Healthy youth development as a model for youth health promotion: A review. *Journal of Adolescent Health*, 22, 368-375.

Brendgen, M. & Vitaro, F. (2008). Peer rejection and physical health problems in early adolescence. *Journal of Developmental and Behavioral Pediatrics, 29*(3), 183-190.

Close (2000). Confirmatory factor analysis of the Academic Self-Regulation Scale. [Unpublished Report].

Close, W., & Solberg, S. (2008). Predicting achievement, distress, and retention among lower-income latino youth. *Journal of Vocational Behavior, 72*(1), 31-42.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd edition). Hillsdale, NJ: Erlbaum.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Costello, A. B. & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation, 10*(7), 1-9.

Darling-Hammond, L. (2004). The color line in American education: Race, resources, and student achievement. *W.E.B. Du Bois Review: Social Science Research on Race*, 1, 213-246.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*(6), 627-668.

Deci, E. L. & Ryan, R. M. (1985). *Instrinsic motivation and self-determination in human behavior.* New York: Plenum Press.

Deci, E. L. & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology, 53*, 1024-1037.

Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology/Psychologie Canadienne, 49*(1), 14-23.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999) A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*(6), 627-668.

Deci, E. L., Nezlek, J., & Sheinman, L. (1981). Characteristics of the rewarder and intrinsic motivation of the rewardee. *Journal of Personality and Social Psychology, 40,* 1-10.

Deci, E. L., Vallerland, R. J., Pelletier, L.G. & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational Psychologist, 26*, 325-346.

Derogatis, L. R., & Spencer, P. M. (1982). *The Brief Symptom Inventory (BSI): Administration, and Procedures Manual-I.* Baltimore, MD: Clinical Psychometric Research.

DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Eccles, J. S. & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology, 53*, 109-132.

Epstein J. L. (2001). *School and family partnerships: Preparing educators and improving schools.* Boulder, CO: Westview.

Gross, D. R., & Capuzzi, D. (2008). Defining youth at risk. In D. Capuzzi, & D. R. Gross (Eds.), *Youth at risk: A prevention resource for counselors, teachers, and parents.* (pp. 3-22). Alexandria, VA, US: American Counseling Association.

Hains, A. H. & Szyjakowski, M. (1990). A cognitive stress-reduction intervention program for adolescents. *Journal of Counseling Psychology, 37*(1), 79-84.

Hicks, B. M. & Patrick, C. J. (2006). Psychopathy and negative emotionality: Analyses of suppressor effects reveal distinct relations with emotional distress, fearfulness, and anger-hostility. *Journal of Abnormal Psychology, 115*(2), 276-287.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*(3), 513-524.

Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric

psychology literatures. *Journal of Consulting and Clinical Psychology, 65*(4), 599-610. Howard, K. A. S., Budge, S. L., & McKay, K. M. (2010). Youth exposed to violence: The role of protective factors. *Journal of Community Psychology, 38* (1), 63-79.

Hufton, N. R., Elliott, J. G., & Illushin, L. (2002). Educational motivation and engagement: Qualitative accounts from three countries. *British Educational Research Journal, 28*(2), 265-289.

Ingram, R. E., & Luxton, D. D. (2005). Vulnerability-stress models. In B. L. Hankin, & J. R. Z. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective.* (pp. 32-46). Thousand Oaks, CA, US: Sage Publications, Inc.

Jerusalem, M. & Schwarzer, R. (1992). Self-efficacy as a resource factor in stress appraisal processes. In: Self-efficacy: Thought control of action. Washington, DC, US: Hemisphere Publishing Corp, 195-213.

Kantor, H. and Brenzel, B. (1992). Urban education and the "truly disadvantaged": The historical roots of the contemporary crisis, 1945-1990. *Teachers College Record, 94*, 278-314.

Khattab, N. (2003). Explaining educational aspirations of minority students: The role of social capital and students' perceptions. *Social Psychology of Education, 6*, 283-

302.

Kline, R.B. (2010). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford Press.

Lent, R. W. (2005). A social cognitive view of career development and counseling. In S. D. Brown & R. W. Lent (Ed.), *Career development and counseling* (pp. 24-41). Hoboken, NJ: Wiley.

Lent, R. W., Brown, S. D., & Larkin, K. C. (1984). Relation of self-efficacy expectations to academic achievement and persistence. *Journal of Counseling Psychology, 31,* 356-362.

Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71*(3), 543-562.

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56*(3), 227-238.

Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American sychologist, 53*(2), 205-220.

Masten, A. S., Hubbard, J. J., Gest, S. D., Tellegen, A., Garmezy, N., & Ramirez, M. (1999). Competence in the context of adversity: Pathways to resilience and maladaptation from childhood to late adolescence. *Development and Psychopathology, 11*(1), 143-69.

Meehl, P. E. (1962). Schizotaxia, schizotypy, schizophrenia. *American Psychologist, 17*, 827-838.

Moeini, B., Shafii, F., Hidarnia, A., Babaii, G. R., Birashk, B. & Allahverdipour, H. (2008). Perceived stress, self-efficacy and its relations to psychological well-being status in Iranian male high school students, *Social Behavior and Personality, 36*(2), 257-266.

Monroe, S. M., & Simmons, A. D. (1991). Diathesis-stress theories in the context of life-stress research: Implications for depressive disorders. *Psychological Bulletin, 110*, 406-425.

Muris, P. (2002). Relationships between self-efficacy and symptom of anxiety disorders and depression in a normal adolescent sample. *Personality and Individual Differences, 32*(2), 337-348.

Muthén, L. & Muthén, B. (2006). *Mplus 4.2 [Computer Software].* Los Angeles, CA:

Muthén & Muthén.

National Center for Educational Statistics (2009). Retrieved June 15, 2010, from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2009064.

Noom, M. J., Dekovic, M., & Meeus, W. H. (1999). Autonomy, attachment, and psychosocial adjustment during adolescence: a double-edged sword? *Journal of Adolescence, 22,* 771-783.

O'Byrne, K. K., Brammer, S., Davidson, M.M., & Poston, W.S.C. (2002). Primary prevention in counseling psychology: Back to the future. *The Counseling Psychologist, 30*(2), 330-344.

Pascarella, E. T. & Terenzini, P. T. (1980). Predicting freshman persistence, involuntary dropout decisions from a theoretical model. *Journal of Higher Education, 48,* 540-552.

Patrick, H., Ryan, A. M., & Kaplan, A. (2007). Early adolescents' perceptions of the classroom social environment, motivational beliefs, and engagement. *Journal of Educational Psychology, 99*(1), 83-98.

Romano, J.L., & Hage, S.M. (2000). Prevention and counseling psychology: Revitalizing commitments for the 21st century. *The Counseling Psychologist, 28,* 733-763.

Ryan, R. M. (1995). Psychological needs and facilitation of integrative processes. *Journal of Personality, 63,* 397-427.

Ryan, A. M. (2001). The peer group as a context for the development of young adolescent motivation and achievement. *Child Development, 72*(4), 1135-1150.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57,* 749-761.

Ryan, R. M. & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

Ryan, R. M., & Grolnick, W. S. (1986). Origins and pawns in the classroom: Self-report and projective assessments of individual differences in children's perceptions. *Journal of Personality and Social Psychology, 50,* 550-558.

Ryan, N. E., Hanin, D., & Solberg, V. (1994). Racial/ethnic, gender, and within group differences in college distress. In V. S. Solberg (Chair), *Recommendations for designing culturally relevant college persistence programming.* Symposium conducted at the 102nd Annual Convention of the American Psychological Association, Los Angeles.

Schwarzer, R. & Jerusalem, M. (1995). Optimistic self-beliefs as a resource factor in coping with stress. In: Extreme stress and communities: Impact and intervention. New York, NY, US: Kluwer Academic/Plenum Publishers, 159-177.

Selye, H. (1963). A syndrome produced by diverse noxious agents. *Nature, 138,* 32.

Sheldon, S. B. (2007). Improving student attendance with school, family, and community partnerships. *The Journal of Educational Research, 100*(5), 267-275.

Solberg, V. S. H., Carlstrom, A. H., Howard, K. A. S., & Jones, J. E. (2007). Classifying at-risk high school youth: The influence of exposure to community violence and protective factors on academic and health outcomes. *The Career Development Quarterly, 55*(4), 313-327.

Solberg, V. S., Close, W., & Metz, A. J. (2002). Promoting success pathways for middle and high school students: Introducing the adaptive success identity plan for school counselors. In C. L. Juntunen, & D. R. Atkinson (Eds.), *Counseling across the lifespan: Prevention and treatment.* (pp. 135-157). Thousand Oaks, CA, US: Sage Publications, Inc.

Solberg, V., Good, G., & Nord, D. (1994). Career search self-efficacy: Ripe for applications and intervention programming. *Journal of Career Development*, *21*(1), 63-72.

Solberg, V. S., Gusavac, N., Hamann, T., Felch, J., Johnson, J., Lamborn, S., & Torres, J. (1998). The adaptive success identity plan (ASIP): A career intervention for college students. *The Career Development Quarterly, 47*, 48-95.

Solberg, V. S., O'Brien, K., Villarreal, P., Kennel, R., & Davis, B. (1993). Self-efficacy and Hispanic college students: Validation of the College Self-Efficacy Inventory. *Hispanic Journal of Behavioral Sciences, 16*, 230-239.

Solberg, V. S., Valdez, J., & Villarreal, P. (1994). Social support, stress, and hispanic college adjustment: Test of a diathesis-stress model. *Hispanic Journal of Behavioral Sciences, 16*(3), 230-239.

SPSS Inc. (2006). SPSS base 15.0 for Windows users guide. SPSS Inc., Chicago, IL.

Stanton-Salazar, R. D. (1997). A social capital framework for understanding the socialization of racial minority children and youths. *Harvard Educational Review*, 67(1), 1-40.

Stevenson, W., Maton, K. I., & Teti, D. (1998) School importance and dropout among pregnant adolescents. *Journal of Adolescent Health, 22*(5), 376-382.

Twenge, J. M. (2010). Birth cohort increase in psychopathology among young Americans, 1938-2007: A cross-temporal meta-analysis of the MMPI. *Clinical Psychology Review, 30*(2), 145-154.

U.S. Department of Labor, Bureau of Labor Statistics. (2007). Tabulations retrieved July 1, 2010, from http://www.bls.gov/cps/cpsaat7.pdf.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72,* 1161-1176.

Vega, W. A., Warheit, G. J., & Meinhardt, K. (1985). Mental health issues in the Hispanic community: The prevalence of psychological distress. In W.A. Vega & M. R. Miranda (Eds.), *Stress and Hispanic mental health: Relating research to service delivery.* Washington, DC: U.S. Government Printing Office.

Wagner, J., Chaney, J., Hommel, K., Andrews, N., & Jarvis, J. (2007). A cognitive diathesis-stress model of depressive symptoms in children and adolescents with juvenile rheumatic disease. *Children's Health Care, 36*(1), 45-62.

Walls, T.A. & Little, T.D. (2005). Personal agency, motivation, and school adjustment inearly adolescence. *Journal of Educational Psychology. 97*(1), 23-31.

Appendix A. Value of Education Scale and Items

This section asks about your beliefs about the importance of school and college. Mark the number on the answer sheet that best represents your present attitude or opinion. Remember, this is not a test, and there are no right or wrong answers.

The range of response options for each item include:

1 = Strongly disagree
2 = Disagree
3 = Neutral/undecided
4 = Agree
5 = Strongly agree

1. Finish school.
2. Do well in school.
3. Go to college.
4. Do well in college.
5. Make sure my teachers know that I want to do well in school.
6. Find out about colleges.
7. Learn how to be successful in college.
8. Get good grades in school.
9. Learn how to be successful in school.
10. Get a college degree.

Appendix B. Academic Self-efficacy Scale and Items

This section asks for information about the degree of confidence you have in completing a variety of activities associated with being a student at your school. Mark the number on the answer sheet that best represents your present attitude or opinion. Remember, this is not a test, and there are no right or wrong answers.

The range of response options for each item include:

> *1 = Not confident at all*
> *2 = Mostly not confident*
> *3 = Somewhat confident*
> *4 = Mostly confident*
> *5 = Extremely confident*

11. Making new friends at school.
12. Talking to teachers about homework.
13. Taking good notes in class.
14. Writing a paper for English class.
15. Joining a sports activity.
16. Understanding what you read in your schoolbooks.
17. Asking a question in class.
18. Joining an after-school club.
19. Correctly figuring out math problems.
20. Turning in your assignments on time.
21. Going to class everyday.
22. Working on a group class project.
23. Getting along with classmates.
24. Doing well on your tests.
25. Using a computer to write a paper.
26. Using the library.
27. Using a computer to search the Web.
28. Participating in class discussions.
29. Keeping up to date on schoolwork.
30. Preparing for a test.
31. Relaxing during the test.
32. Studying with others for a test.

Appendix C. Relatedness Scale and Items

This section asks about your relationships with family, teachers, and friends. Mark the number on the answer sheet that best represents your present attitude or opinion. Remember, this is not a test, and there are no right or wrong answers.

The range of response options for each item include:

1 = Strongly disagree
2 = Disagree
3 = Neutral/undecided
4 = Agree
5 = Strongly agree

33.   There is a family member who I can talk to about important decisions in my life.
34.   Members of my family recognize my abilities and skills.
35.   There is no one in my family who shares my interests and concerns.**
36.   I am very close with at least one other member of my family.
37.   There is no one in my family with whom I feel comfortable talking about my problems.**
38.   I can talk about school issues or concerns with a family member.
39.   There are family members I can count on in an emergency.
40.   Teachers here care about their students.
41.   There is a teacher here I can go see to talk about academic problems.
42.   Teachers here respect me.
43.   Teachers here are interested in my success.
44.   There is a teacher here I can talk to about a personal problem.
45.   I have friends here at school.
46.   There are friends I can talk to about important decisions.
47.   There is a friend I can depend on for help.
48.   I have no friends I can depend on.**

**Indicates that the item is reverse scored.

Appendix D. Stress Scale and Items

This section asks about your beliefs about the stressors in your life. Mark the number on the answer sheet that best represents your present attitude or opinion. Remember, this is not a test, and there are no right or wrong answers.

The range of response options for each item include:

> *1 = Almost never*
> *2 = Not very often*
> *3 = Somewhat often*
> *4 = Very often*
> *5 = Almost always*

49. Difficulty trying to fulfill responsibilities at home and at school.
50. Difficulty trying to meet friends.
51. Difficulty taking tests.
52. Difficulty talking with teachers about schoolwork.
53. A fear of failing to meet family expectations.
54. Difficulty asking questions in class.
55. Difficulty living in the local community.
56. Difficulty understanding how to use the school library.
57. Difficulty handling relationships.
58. Difficulty handling your schoolwork load.
59. Difficulty with classmates treating you differently than they treat each other.
60. Difficulty writing papers for class.
61. Difficulty learning how to use computers.
62. Difficulty paying for school supplies.
63. Money difficulties due to owing money to others.
64. Difficulty paying for food.
65. Difficulty paying for recreation and entertainment.
66. Difficulty due to your family experiencing money problems.
67. Difficulty getting your homework done on time.
68. Difficulty because of feeling a need to perform well in school.
69. Difficulty from teachers.
70. Difficulty from classmates.

Appendix E. Distress Scale and Items

This section asks about how often you have had any of these health-related experiences during the past week. Mark the number on the answer sheet that best represents your present attitude or opinion. Remember, this is not a test, and there are no right or wrong answers.

The range of response options for each item include:

>*1 = Almost never*
>*2 = Not very often*
>*3 = Somewhat often*
>*4 = Very often*
>*5 = Almost always*

71.   Being tired but unable to sleep.
72.   Mood swings.
73.   Feelings of danger.
74.   Feeling depressed.
75.   Feelings of self-doubt.
76.   Nightmares.
77.   Snacking more than usual.
78.   Feeling hopeless.
79.   Sleeping less than usual at night.
80.   Getting sick a lot.
81.   Overeating.
82.   Breaking things when angry.
83.   Headaches.
84.   Increased heartbeat.
85.   Fighting with friends.
86.   Feeling cranky.
87.   Losing your temper.
88.   Feeling "jumpy."
89.   Not sleeping well.
90.   An upset stomach.
91.   Inability to sleep.
92.   Increased appetite.
93.   Becoming easily upset.

Appendix F. Motivation Scale and Items

This section asks about your reasons for going to school. Different people have different reasons for going to school; we just want to know how much you agree or disagree with each reason given below. Mark the number on the answer sheet that best represents your present attitude or opinion. Remember, this is not a test, and there are no right or wrong answers.

The range of response options for each item include:

1 = Strongly disagree
2 = Disagree
3 = Unsure/undecided
4 = Agree
5 = Strongly agree

94.   Because I really enjoy school.
95.   Because, if I didn't, I'd feel guilty.
96.   So I can make lots and lots of money.
97.   Because education is important for the goals I have.
98.   So important people in my life won't be disappointed in me.
99.   Because it's fun.
100.   Because I have to; it's required.
101.   Because I don't want to let others down.
102.   Because skills like reading, math, and science are important to me.
103.   Because if I don't, I'll get punished.
104.   Because failing to get my diploma would bother and disappoint me.
105.   Because there are a lot of interesting things to do.
106.   Because I see the importance of learning.
107.   Because, to me, education is important.
108.   I wouldn't be here if I really had a choice about it.