

ABSTRACT

Title of Dissertation: THE RELATIONSHIPS AMONG STRESS, ACADEMIC COPING, AND ACADEMIC OUTCOMES: A MODERATED MEDIATION MODEL

Benjamin Perlow, Doctor of Philosophy, 2018

Dissertation directed by: Professor Colleen O'Neal
Department of Counseling, Higher Education,
and Special Education

Researchers have attempted to ascertain how to improve student academic success. In this short-term longitudinal dissertation study, I used archival data and the constructs of self-determination theory and the cognitive appraisal model, to investigate the relationships among perceived stress, academic coping, and academic outcomes. The goal of this dissertation was to determine whether T2 *problem-solving* academic coping strategies mediated the relationship between student T1 perceived stress and T3 student academic outcomes and if T1 perceived stress served as a moderator between the T2 academic coping strategies and the T3 academic outcomes. I adapted and augmented an academic coping measure and determined the reliability and validity of the measure in a sample of 146 students in 3rd through 5th grade (68% Latino/Hispanic; 97% DLL students).

I conducted an exploratory factor analysis to test if the modified items loaded onto two expected factors. I subsequently conducted correlation, mediation, moderation,

and moderated mediation analyses to test the predictive validity of the modified scale and the moderated mediation model.

Results indicated that, contrary to my expectations, the modified academic coping measure loaded onto one factor. As expected, the T1 academic coping measure had a significant correlation with T3 student-reported academic engagement. However, it was not significantly correlated to T3 teacher-reported academic engagement or T3 literacy achievement. Mediation analyses suggested that T2 academic coping did not mediate the relationship between T1 perceived stress and T3 academic outcomes when controlling for demographics and T1 academic-outcome variables; however, mediation was significant with the student-reported engagement outcome and without the T1 academic outcome control. T1 perceived stress did not significantly moderate the relationship between T2 academic coping and T3 academic outcomes, in the context of the mediation model. Future researchers may want to conduct similar studies on a larger more diverse sample of participants.

THE RELATIONSHIPS AMONG STRESS, ACADEMIC COPING, AND
ACADEMIC OUTCOMES: A MODERATED MEDIATION MODEL

by

Benjamin Perlow

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Advisory Committee:

Colleen O'Neal, Ph.D., Chair

Donald Bolger, Ph.D., Dean's Representative

Natasha Mitchell, Ph.D.

William Strein, D.Ed.

Cixin Wang, Ph.D.

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Chapter 1: Introduction

There has been a nationwide push to find ways to improve high school graduation rates (DePaoli, Balfanz, & Bridgeland, 2016). Some researchers (i.e., Skinner & Wellborn, 1997) posit that the academic coping strategies used by students may affect their ability to reengage with the classroom material and ultimately become more successful academically. Although much research has been done on coping, in general, less research has been conducted on academic coping, especially with dual language learners.

This lack of research on academic coping is surprising as some researchers have thought that academic coping could help indirectly improve high school graduation rates by increasing the academic outcomes of students (Skinner & Wellborn, 1997). Over seventeen percent of students in the United States do not graduate from high school, and communities are especially at risk for not graduating from high school (DePaoli, Balfanz, & Bridgeland, 2016). Researchers have found that students who do not graduate from high school are more likely to be unemployed later in life, receive lower salaries, be gang members, and become pregnant as teenagers (Skinner & Wellborn, 1997).

This dissertation seeks to further analyze the relationships among perceived stress, academic coping, and academic outcomes by trying to determine how the perceived stress of low income DLL students may affect their academic outcomes and whether academic coping strategies explain how perceived stress affects the academic outcomes of DLL students. In addition, this dissertation is examining whether academic coping strategies more strongly affect the academic outcomes of students experiencing lower levels of perceived stress than higher levels of perceived stress. The hope is that

further coping strategies can be identified to positively affect the academic outcomes of elementary school students, especially low socio-economic minority students. Self-determination theory and cognitive appraisal theory are the two primary constructs used in this study to help explain the relationships among perceived stress, academic coping, and academic outcomes.

Self-determination theory posits that behaviors in the classroom that improve the student's autonomy, relatedness, and competence will help the student re-engage in the classroom material and likely make them more successful academically (Pitzer, 2015; Skinner & Wellborn, 1997). The items in the adapted coping measure used in this research are based on items previously used by Skinner, Pitzer, & Steele (2013) that research suggests help students overcome obstacles in the classroom and re-engage in the academic process.

Cognitive appraisal theory emphasizes that when individuals encounter a stressor, they will appraise whether the stressor affects them, and if so, what (if anything) could be done to overcome the stressor. The coping strategies that people use are dependent on their appraisal of the stressor (Blaxton & Bergeman, 2017). People are more likely to use different coping strategies based upon how modifiable they appraise their stressors to be (Lazarus & Folkman, 1984). If stressors are perceived to be more modifiable, then it may be more common and adaptive for an individual to use a behavioral coping strategy to alter the stressors. However, if stressors are viewed as less modifiable, then an emotional or avoidance strategy may be more adaptive and used more commonly (Blaxton & Bergeman, 2017). In fact, if a person continually tries to use a problem-solving coping strategy to alleviate a situation that is not modifiable, it can lead to

psychological distress (Lazarus, 1993). A moderated mediation model ((MacNeil, Kosberg, Durkin, Dooley, DeCoster, & Williamson, 2009; Preacher, Rucker, & Hayes, 2007) was used in this dissertation to further analyze the relationships among perceived stress, problem-solving academic coping, and academic outcomes.

The moderated mediation model investigated (a) the degree to which problem-solving academic coping at time point 2 (T2) mediated the relationship between perceived stress at time point 1 (T1) and the academic outcomes of emotional engagement and literacy achievement at time point 3 (T3); and (b) the degree to which T1 perceived stress moderated the relationship between T2 academic coping and T3 academic outcomes such that the degree of the relationship between T2 academic coping and T3 academic outcomes would vary across different levels of T1 perceived stress.

For the analyses, I used archival data and created an academic coping measure with items modified from previous research (Skinner, Pitzer, & Steele, 2013). The development of a new measure was useful for this dissertation as a preliminary research review by this author (unpublished) found that there was little consensus in the literature about an appropriate academic coping measure to use. Several studies looking at the relationship between academic coping and academic achievement did not publish reliability information for their academic coping measure on their sample (Arsenio & Loria, 2014; MacCann, Fogarty, Zeidner, & Roberts, 2011, MacCann, Lipnevich, Burrus, & Roberts, 2012; Steward, Jo, Murray, Fitzgerald, Neil, Fear, & Hill, 1998; Steward, Steward, Blair, Jo, & Hill, 2008).

In order to provide more context for the adapted coping measure, in Chapter 2 I operationalize important terms associated with the coping literature and describe a history

of the construct. I also provide information regarding the analyses used for the studies and previous research on the relationships among perceived stress, academic coping, and academic outcomes. Chapter 3 describes the procedure, the sample, the measures, the development of the adapted coping measure items, and the analysis. Chapter 4 reviews the results of the factor analyses and describes the results for the correlational analyses, the mediation analyses, the moderation analyses, and the moderated mediation analyses. Chapter 5 provides a discussion of the results, limitations of the study, and suggested next steps for research with academic coping.

Chapter 2: A Review of the Literature

Coping

School is often considered from an ecological perspective as an environment with multiple levels. Individual development takes place under macro-environmental conditions (i.e., statewide standards and neighborhood safety conditions) and micro-environmental events (teacher/student and peer interactions; Bronfenbrenner, 1989; Ruus, Veisson, Leino, Ots, Pallas, Sarv, & Veisson, 2007). Academic coping is a method for students to respond to these environmental contexts and overcome hardships in school. One of the most frequently cited definitions of coping is attributed to Lazarus (1993, p. 237): “Coping is defined as ongoing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person.” In the classroom, the demands may include following school rules and performing school work (Ruus et al., 2007).

Lazarus also states that the process of coping has both trait and state aspects. The trait element of coping is operationalized as an individual using similar coping strategies consistently over time. The state element of coping is operationalized as how a person’s coping strategies change depending on the situation. Both trait and state elements of coping are “two sides of the same coin, and both sides are usually relevant” (Lazarus, 1993, p. 236).

The current project primarily examines the trait element of coping strategies, that is, how students tend to use coping strategies to overcome perceived stress in elementary school. Specifically, academic coping is operationalized in this study as the practice of a student using ongoing cognitive and behavioral strategies to manage demands at school

that he or she perceives as taxing (e.g. confusing directions or the inability to solve a problem alone) in the face of stressors (both in the school and environment).

The current study frames different coping strategies as adaptive at different times (Lazarus, 1993). For instance, whereas denial may be a beneficial strategy in some situations, such as when encountering minor setbacks on a road to recovery, it can be harmful in other situations, such as denying that a heart attack is occurring. Therefore, there may not be universal “adaptive coping methods” but rather context specific “adaptive coping methods.” The cognitive appraisal model describes this theory.

The cognitive appraisal model was developed by Lazarus and colleagues over a number of years (Compas, Banez, Malcarne, & Worsham, 1991; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Lazarus & Folkman, 1984). Cognitive appraisal occurs when an individual encounters a situation and first evaluates whether he/she can be negatively affected by it and secondly decides what (if anything) can be done to either avert or overcome harm (Folkman, et al., 1986). Coping strategies are then chosen based upon this appraisal of the stressor. Typically, individuals choose more *problem-solving* type strategies to overcome obstacles that they perceive as changeable and favor ignoring or avoiding type strategies in situations they perceive as needing to be accepted (Folkman, Lazarus, Gruen, & DeLongis, 1986). Often, problem-solving coping strategies have been shown to improve outcomes for individuals; however, under conditions where the problem cannot be easily fixed, emotional coping strategies may be more beneficial and problem-solving strategies can cause distress (Blaxton & Bergeman, 2017; Lazarus, 1993).

In sum, although the coping strategies used by students may be case-specific, this dissertation is primarily interested in determining whether certain strategies are often more helpful in improving academic achievement (as measured in this study by increased literacy achievement and school engagement) for students experiencing different levels of perceived stress. A history of coping theory and a definition of self-determination theory are described next.

Coping Theory

The term “coping” has evolved over time and several theories have used the term. The original theory underlying coping, labeled ego-defense, had its underpinnings in psychoanalytic theory. Psychoanalytic theorists postulated that individuals used certain strategies (i.e., defense mechanisms) such as regression, compensation, projection, and displacement to overcome feelings of anxiety from potentially harmful stimuli or unpleasant situations (Lazarus, 1993; Plutchik, Kellerman, & Conte, 1979). However, as the research and development of coping as a construct has progressed since the 1960s, additional theories have been given greater prominence in the coping literature. Several coping theories conceptualize coping strategies as broad methods that people use to overcome their stressors.

Theorists have categorized coping strategies in different ways. Weiten & Lloyd (2003) suggested that there are adaptive and maladaptive strategies. Adaptive strategies serve to improve functioning while maladaptive strategies worsen the problem. For instance, *maladaptive* coping strategies may include giving up or self-blaming (Brown, Howcroft, & Jacobs, 2009; Weiten & Lloyd, 2003). Three primary *adaptive* coping types include *appraisal-focused* strategies, *problem-focused* strategies, and *emotion-focused*

strategies. *Appraisal-focused* strategies focus on changing the way a person thinks about a situation or problem (Flaskerud, 2012). *Problem-focused* strategies involve a person managing the problem underlying the stress (Folkman, 2013) and *emotion coping* strategies are how a person manages his/her emotions that accompany stress (Brannon & Feist, 2009).

Coping has also been categorized based upon engagement versus disengagement categories (Holahan & Moos, 1990; Taft, Resick, Panuzio, Vogt, & Mechannic, 2007; Waldrop & Resick, 2004). Coping strategies where participants take active steps to solve their problems are *engagement* coping strategies, whereas coping strategies in which people avoid the problem are considered *disengagement* coping strategies.

One of the most important theories for the current research into academic coping is self-determination theory (Skinner, Pitzer, & Steele, 2013; Skinner & Wellborn, 1997). Self-determination theory is “An approach to human motivation and personality that uses traditional empirical methods while employing an organismic meta-theory that highlights the importance of humans’ evolved inner resources for personality development and behavioral self-regulation” (Ryan & Deci, 2000, p. 68). In essence, the theory highlights an individual’s ability to develop their inner resources to build strong personality and behavioral self-regulation skills. Developing inner resources is vital in overcoming environmental stressors.

Researchers such as Skinner and Wellborn applied self-determination theory to the academic realm in an effort to better understand how students can overcome academic obstacles to prevent dropping out from school and remain engaged in the learning process (Pitzer, 2015; Skinner & Wellborn, 1997). Self-determination theory

postulates that there are three innate psychological needs -- competence, autonomy, and relatedness (Ryan & Deci, 2000; Skinner & Wellborn, 1997) -- that when increased can enhance the intrinsic motivation of an individual. Skinner et al. (2013) posit that coping strategies used by individuals that promote core psychological needs such as competence, relatedness, and autonomy are “adaptive” and often lead to improved academic achievement and school engagement while other strategies that do not promote these qualities are “maladaptive” and promote disengagement in the classroom.

Competence is defined by Ryan and Deci (2000) as an individual’s self-efficacy for an activity (p. 69) or one’s belief that he/she will succeed in the activity. Perceived ability to succeed academically has been associated with increased school engagement and academic achievement (Pitzer, 2015; Skinner, Wellborn, & Connell, 1990) along with continued determination to continue working on difficult challenges (Elliott & Dweck, 2005).

Autonomy is defined as an internal perceived locus of causality (Ryan & Deci, 2000, p. 70; deCharms, 1968). In the classroom, positive academic outcomes have been associated with students understanding the purpose of a task and providing internal value into the completion of the task (Deci & Ryan, 2000; Pitzer, 2015). Adults providing autonomy to students is often contrasted with teachers or parents who are controlling.

Relatedness refers to the need to feel belongingness and connectedness with others (Ryan & Deci, 2000, p. 73). In the school system, students often seek out relationships with peers and teachers. Feeling closeness with peers and teachers has been associated with increased academic achievement and increased motivation to succeed academically (Gutman & Midgley, 2000; Osterman, 2000; Pitzer, 2015).

A variety of stressors, both in the classroom and community, may negatively impact the psychological needs of competence, autonomy, and relatedness. Skinner and Wellborn (1997) found that in the school setting some of the common stressors include participating in projects too difficult for a student, not understanding how a project will be graded, feeling coerced to behave in a certain way, and being ignored or overlooked by teachers (Skinner & Wellborn, 1997).

As shown in Appendix A, this dissertation asked students about the likelihood of them performing a coping strategy if they are confronted by certain school stressors such as being confused about a question in school, not knowing how to solve a problem in school, or being mad at school. The study also looks at the overall levels of perceived stress experienced by the student (found in Appendix B). Items in the perceived stress scale in this study include having the students think about how frequently they encounter situations in which they feel overwhelmed, situations that were outside of their control, or situations that were unexpected. One of the goals of the study is to determine whether the ability of a student to overcome certain stressors at school is affected by perceived stress levels.

Academic Coping

Based on self-determination theory, Skinner et al., (2013) developed a multidimensional measure of coping. To do this, the researchers looked at past studies (Skinner, Edge, Altman, & Sherwood, 2003; Zimmer-Gembeck & Skinner, 2011) in an effort to determine the coping categories used most often by children and adolescents and how to best group coping strategies by function. The groupings of the coping strategies in

their multidimensional measure of coping are done on two different levels: adaptive /maladaptive and by function.

Skinner et al., 2013 perceive adaptive strategies as those that promote engagement with the classroom material and the core psychological needs of autonomy, competence, and relatedness with the overall goal of improving academic achievement and engagement. Maladaptive strategies are those that do not promote the core psychological needs and are frequently associated with disengagement in school. Coping strategies were also combined by function in an effort to both better analyze the underlying reason students may perform certain coping strategies and to develop a useful way to consolidate over 400 coping strategies found in the research to 11 meaningful groups that could fit into a measure. An example of grouping coping strategies by function includes combining strategies of *problem-solving* and *strategizing* as they both require individuals to exert effort to improve undesired situations (Skinner, Pitzer, & Steele, 2013).

The measure they created has 11 different primary types of coping strategies used by third through sixth graders to overcome stressors in their academic environment. The types of coping are *strategizing*, *help-seeking*, *comfort-seeking*, *self-encouragement*, *commitment*, *confusion*, *escape*, *concealment*, *self-pity*, *ruminaton*, and *projection*. Skinner et al., (2013) consider *strategizing*, *help-seeking*, *comfort-seeking*, *self-encouragement*, and *commitment* to be adaptive strategies as they are associated with students effectively gaining higher levels of relatedness, competence, and autonomy. By contrast, the remaining six types are considered maladaptive because they do not promote these needs.

The researchers viewed the relationships among the use of strategies, perceptions of one's-self, and environmental stressors to be interactive. Therefore, how students interact with stressful events impacts how they view themselves and their environment. When students consistently use adaptive coping techniques, the researchers found that in addition to gaining higher levels of their core psychological needs, the students also were engaged in school and in their work, indicating that they were more "enthusiastic" in working on tasks in class and re-engaging with difficult problems and activities.

This dissertation is focusing on students' use of two academic coping strategies, *strategizing* and *help-seeking*, to improve literacy achievement and engagement. These two strategies, depending on the research paradigm, are considered, *adaptive*, *problem-solving*, or *engaging* strategies (Holahan & Moos, 1990; Skinner et al., 2013; Weiten & Lloyd, 2003). They were selected for this dissertation because, in addition to improving students' relatedness, competence, and autonomy, "in school, *strategizing* and *help seeking* are considered adaptive because they provide students a route back toward reengaging constructively with challenging academic material" (Skinner et al., 2013, p. 807). Reengaging constructively with difficult academic material is important because it helps students persist on difficult tasks and overcome academic obstacles (Pitzer, 2015). Therefore, I selected these two strategies because research has suggested that for many students *strategizing* and *help-seeking* strategies help students stay engaged in the material and succeed academically (Pitzer, 2015; Skinner et al., 2013). As opposed to considering these strategies as "adaptive strategies," this study will refer to them as *problem-solving* strategies.

Potential Relevance of Academic Coping for Dual Language Learners

As previously mentioned, students in limited English speaking communities are at risk for not graduating from high school and there is a hope, among some researchers, that academic coping strategies can help all students better succeed in school (DePaoli, Balfanz, & Bridgeland, 2016). Given that the psychological research on dual language learners is limited, this literature review will also include immigrant student research, given that many dual language learners are first or second-generation immigrant students and many members of the sample are immigrant students (as evidenced by school administrator report; Winsler, Burchinal, Tien, Peisner-Feinberg, Espinosa, Castro, LaForett, Kim, & Feyter, 2014).

In this study, a first-generation immigrant student is a student who was born in a foreign country and immigrated to the United States. A second-generation student is a person whose parents were born in a foreign country, and the student was born in the United States. There is a large amount of variance among schools in the United States in how immigrant students are welcomed into the community and integrated into the school environment and culture (Gitlin, Buendía, Crosland, & Doumbia, 2003; Ruiz-de-Velasco & Fix, 2000).

There are several structures in place in schools that may make it more difficult for immigrants to succeed academically. A primary example is that the curriculum in the United States is typically taught in English, without a dual language option or school-wide approach. According to Yeh & Inose (2002), one of the primary obstacles facing many immigrant students in the school setting (especially first-generation immigrant students) is difficulty understanding and communicating with peers and teachers (Yeh & Inose, 2002). Speaking a different language and being away from the supportive

community in their home country may make it difficult for immigrant students to relate to their peers and understand the information being taught in class to gain competence.

Additionally, in many school systems, immigrant students face unique factors causing acculturative stress. Acculturative stress is the term used to describe the stress immigrants face trying to navigate differences between the cultures of their home countries and host countries (Sirin, Ryce, Gupta, & Rogers-Sirin, 2013). Additional causes of acculturative stress for many students include learning new cultural rules and expectations, handling incidences of discrimination, and managing internal conflicts regarding preserving their previous culture while adapting a new culture (Berry, 1997; Sirin et al., 2013; Suárez-Orozco & Suárez-Orozco, 2001). It is likely that dual language students may perceive these obstacles to be taxing and beyond their internal resources and, therefore, requiring academic coping.

With these unique and often more taxing stressors experienced by immigrant students, more research needs to be conducted on what academic coping strategies are associated with immigrant student academic success. It is unclear whether the *problem-solving* coping strategies described by Skinner et al., (2013) will be as beneficial for immigrant students as their study was normed on a primarily Caucasian monolingual population.

Creation of Modified Academic Coping Factors

Much of the research surrounding academic coping of students have been conducted on Caucasian students. However, we cannot assume that measures function the same across demographic groups (Cokley, 2007; Miller & Sheu, 2008). It is important to analyze the psychometric functioning of an adapted scale to determine whether the

reliability and factor structure of the *strategizing* and *help-seeking* indices are similar across samples and whether modifying items alters the structure of the scale.

In their research with primarily Caucasian students, Skinner et al., (2013) found that *problem-solving* academic coping indexes are positively correlated with relatedness, perceived competence and autonomy in the classroom. Additionally, some research has found a relationship between *problem-solving* academic coping and grade point average (MacCann, Fogarty, Zeidner, & Roberts, 2011; Struthers, Perry, & Menec, 2000).

I tested (a) the psychometric qualities of a modified academic coping measure (i.e., finding the internal consistency alpha values of the factor(s) and the test-retest reliability of the factor(s)), and (b) the relationship of academic coping with later academic outcomes in a diverse sample. The methods for creating the new factor and the exploratory factor analysis are found in the Methods section.

Methods used for analysis of measure. Exploratory factor analysis (EFA) was used in this dissertation in an effort to determine the number of factors that account for the items in the questionnaire (Brown, 2009b). A factor is a latent variable that explains the relationship among the items in the observed measure and accounts for relationships and correlations among the observed measure (Brown & Moore, 2012). Factors are typically homogenous scales that are interpretable as the items in the scales are often similar in design and/or meaning. Unlike confirmatory factor analysis, exploratory factor analysis does not make a-priori predictions regarding the data. As the items in this dissertation are worded quite differently than the wording in the Skinner, Pitzer, & Steele (2013) measure (Appendix A), it is appropriate to use exploratory factor analysis to

determine the factors for the items. The hypothesized factors can be found in Figure 1 below.

Exploratory factor analysis also provides strong evidence for both convergent and discriminant validity (Brown & Moore, 2012; Cole, 1987). Convergent validity occurs when items associated with a similar construct are interrelated and load onto a specific factor. Discriminant validity occurs when items of distinct constructs are found to not be highly correlated and can be assessed by looking at the correlations between the trait factors. Both convergent and discriminant validity are important in this study for determining whether the items load onto specific latent variables.

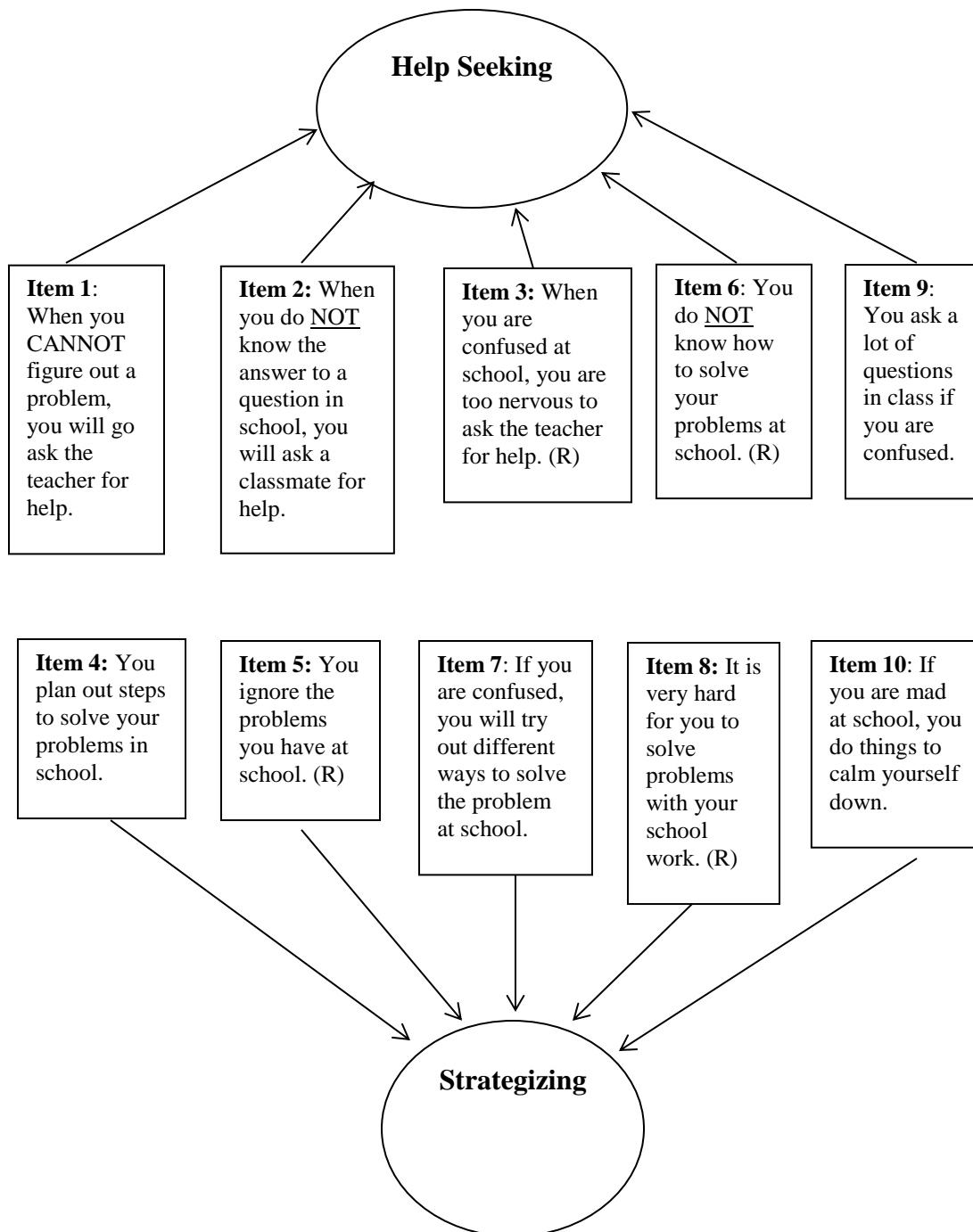


Figure 1. Predicted item loadings on two academic coping factors.

Influence of Academic Coping on Academic Achievement

Previous research suggests that problem-solving academic coping is positively associated with academic outcomes for many students. To measure the predictive validity of the *strategizing* and *help-seeking* factors, the factors will be correlated with later literacy achievement scores and emotional engagement scores. Research examining the relationship between academic coping variables and academic outcomes will be described next. Figure 2 describes the hypothesized relationship between T2 academic coping and T3 academic outcomes. A table, which was partially created in the unpublished research review paper by this author, summarizing the coping studies, samples, measures, and outcomes can be found in Appendix C for reference.

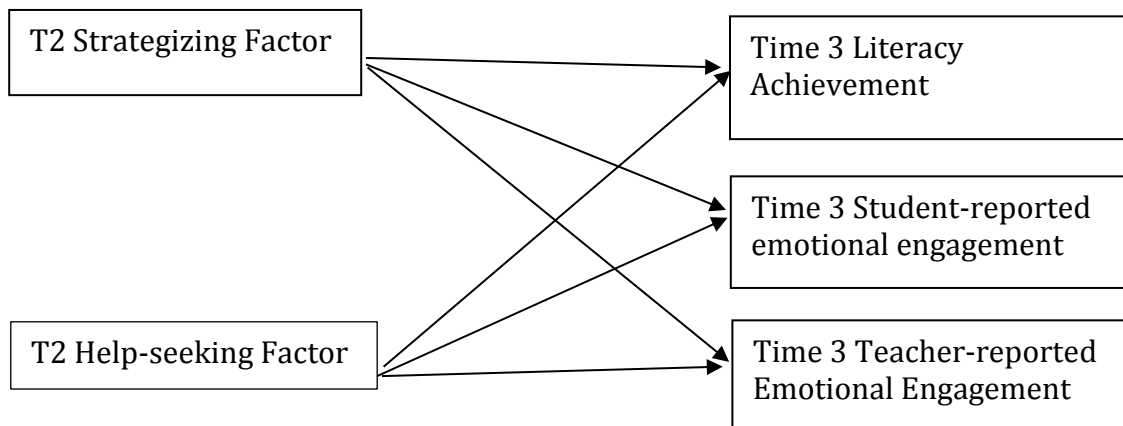


Figure 2. Predicted model of relationships between T2 academic factors and T3 academic outcome variables.

Previous studies have demonstrated that *problem-solving* academic coping strategies (i.e., *strategizing* or *help-seeking* strategies) are often positively related to academic outcomes in samples that were primarily Caucasian and/or are in more affluent areas. Some of the research with this population has been conducted on undergraduate students. Research by Struthers, Perry, and Menec (2000) and MacCann, Fogarty, Zeidner, & Roberts (2011) analyzed the relationship between coping strategies and academic outcomes used by undergraduate students.

In the study by Struthers, Perry, and Menec (2000), college students were asked about the likelihood of their using specific coping strategies following poor academic performance. The genders, ages, and races of the participants were not published. The authors found that problem-focused strategies, defined as involving “thoughts, actions, and strategies directed toward altering the source of stressful events” (Struthers et al., 2000, p. 582), were associated with the students being more motivated to succeed and receiving higher grades in their introductory psychology course than students not using problem-focused academic coping strategies.

Similarly, on a sample of community college students, MacCann, et al. (2011) found that students who engaged in *problem-focused* academic coping strategies (such as breaking assignments down into more manageable pieces) tended to have higher grade point averages and better emotion management skills (i.e., the ability to negate negative emotions and preserve happier, more positive emotions).

Other researchers conducted studies examining the relationship between academic coping strategies and academic achievement outcomes on samples of students from first to twelfth grade. These studies included research by Arsenio & Loria (2012) with a

sample of 119 upper class high school students, MacCann et al., (2011) with a sample of 293 eighth grade students, MacCann, Lipnevich, Burrus, & Roberts, (2012) with a sample of 354 high school students, Schenke, Lam, Conley, & Karabenick, (2015) with a sample of 3897 students in grades 7–11, Swanson, Valiente, Lemery-Chalfant, & O'Brien, (2011) with a sample of 240 middle class students in grades 3-6 (55% Mexican American), and Ryan, Hicks, & Midgely (1997) with a sample of 443 fifth graders.

Similarly to the previous studies on students in college, these researchers also found positive correlations between *problem-solving* academic coping strategies (i.e., strategizing or help seeking strategies) and academic outcomes or a negative relationship between *disengaged coping* strategies and academic outcomes. Research by Basáñez, Warren, Crano, & Unger, (2014) with a sample of 2,214 Latina/o adolescents in tenth and eleventh grade, also found a positive relationship between active coping strategies involving seeking advice and support from family members and academic outcomes.

However, in some studies where the authors identify the students as being at risk for high levels of perceived stress, or in samples in urban settings, researchers found a negative relationship between *problem-solving* academic coping strategies and academic outcomes in at least some of the sample. Studies by Crean (2004) and Gonzalez, Sandler, & Friedman (2001) were both conducted with samples of students in inner city middle schools.

In the study by Crean (2004), the research was conducted on inner city Latino/a 6th and 7th grade students. The author found that there was a negative relationship between students who were more likely to use approach *problem-solving* coping strategies and academic performance. In the study, academic performance was measured

by a combination of grade point average, conduct in the classroom, and peer ratings of sociability.

In a study with inner-city seventh and eighth adolescents (60% female), Gonzales, Tein, Sandler, and Friedman (2001) looked at the relationship among stressful events (i.e., family trouble, family conflict, economic hassles, peer hassles, school hassles, community violence/victimization, perceived discrimination, and acculturation/language difficulties), coping strategies, conduct problems, depression, and academic achievement (GPA). The researchers found that for females there was a positive relationship between active *problem-solving* academic coping strategies and academic achievement. However, for males experiencing high levels of stress in the community, there was no longer a positive relationship between *problem-solving* academic coping and academic achievement.

Some researchers working with African American students in urban city schools have found that avoidance academic coping strategies have been associated with increased academic outcomes (i.e. school attendance and GPA; Steward, Jo, Murray, Fitzgerald, Neil, Fear, & Hill, 1998; Steward, Steward, Blair, Jo, & Hill, 2008). This finding is consistent with previous research by Lazarus (1993) that demonstrated that if individuals perceive their stressors to be unmodifiable then more avoidant strategies often lead to better outcomes as problem solving coping strategies can be futile.

Coping and literacy achievement. Research on coping with academic stress has primarily looked at grade point average as an outcome variable. Fewer studies have analyzed literacy achievement as an outcome variable, and even fewer looked at the relationship between coping and literacy in an immigrant sample. However, many

researchers understand the importance of improving literacy. Cassell (2004) posited that, “Reading and writing literacy remain the basis of education, and the prerequisites to science, mathematics, and technology fluency” (pp. 75-76). Huffaker (2004) indicated that verbal literacy (i.e., reading and writing) is vital both at school and later during adult employment.

Many first or second-generation immigrant students from Central America (such as those in this study) or Mexico may be at particular risk for struggling with literacy as they are often learning English but also may not have had adequate education in their native countries (Ruiz de Velazco & Fix, 2000; Yeh & Inose, 2002) or their parents’ education may be limited (Calzada et al., 2015; Takanishi, 2004). Yet, despite these risk factors, many immigrant students perform as well as or better than native born peers among many academic outcomes (Calzada et al., 2015). Much of the research regarding immigrant student achievement is regarding the involvement of the family in school and family values regarding school (Calzada et al., 2015; Carreón, Drake, & Barton, 2005; Hao & Bonstead-Bruns, 1998) and less on personal and individual behaviors (such as academic coping) that may improve literacy achievement.

Although fewer in number, several studies have analyzed how *problem-solving* coping strategies affect literacy achievement. Researchers have found that students who use approach or active academic coping strategies (such as *problem-solving* academic coping strategies) tend to perform better with reading achievement (Boon, 2010; Plante & Goldfarb, 1993; Skinner & Wellborn, 1997; Wade, 1981; Paris & Oka, 1989).

This positive correlation between *problem-solving* academic coping strategies and literacy achievement was found across a wide variety of samples. Wade (1981) found that

highly motivated anxious individuals in primary school in Great Britain were more likely to use *problem-solving* coping strategies and achieve better academically in reading. In Australia, Boon (2010) was researching the coping strategies used by students 8-10 years old who had to move more than twice in three years. He then looked at the academic achievement of the students. He found that mobile and non-mobile students who tend to use “positive” *problem-solving* coping strategies tended to have fewer suspensions and higher achievement in English and math classes. Plante & Goldfarb (1993) also conducted research on elementary school students and found a positive relationship between *problem-solving* coping strategies and reading, math, and written language scores on the Woodcock Johnson Test-Revised. Additionally, research on students with learning disabilities found that the students who use *problem-solving* academic coping strategies were more likely to use a variety of strategies and have higher literacy achievement (Paris & Oka, 1989).

In sum, some research suggests that academic adaptive coping strategies are often beneficial in helping students improve their decoding and comprehension skills. However, more research needs to examine whether *help-seeking* and *strategizing* skills will help dual language learners and whether these strategies help students reporting high levels of perceived stress.

Influence of Problem Solving Academic Coping on Emotional Engagement

Furthermore, the relationship between academic coping and emotional engagement needs to be examined, especially with ethnic minority immigrant students, as emotional engagement has been associated with higher school achievement (Skinner, Wellborn, & Connell, 1990; Wang & Holcombe, 2010). There are many measures of

emotional engagement that conceptualize the emotional engagement construct differently (Fredricks & McColskey, 2012).

As described further in the methods section, the emotional engagement measure in this study is the five item Engagement vs. Disaffection with Learning Scale (EvsD; Skinner, Furrer, Marchand, & Kindermann, 2008). The authors of the scale describe the instrument as measuring students “active participation in academic activities in the classroom” (Skinner, Furrer, Marchand, & Kindermann, 2008, p. 766). The authors found that traits such as interest in the material and enthusiasm for learning are conducive to performing better academically.

According to the motivational model posited by Skinner & Wellborn, students who use active flexible coping strategies such as *strategizing* or *help-seeking* strategies, are more likely to stay engaged in the academic process and “maintain vigorous interactions with academic material” (Skinner & Wellborn, 1997, p. 408).

Positive relationships between problem-solving academic coping strategies and emotional engagement have been found with middle school and high school students (Reschly, Huebner, Appleton, & Antaramian, 2008). In their study, the authors found that *problem-solving* academic coping strategies were associated with positive thoughts at school and higher levels of emotional engagement. Similarly to the research by Skinner, et al. (2008), Reschly et al. (2008) found that enthusiasm and positivity about learning facilitated better learning opportunities for students and improved individuals’ ability to adapt appropriately to the environment.

Relationships among Stress, Academic Coping, and Academic Outcomes

This dissertation is also seeking to further investigate the relationships among perceived stress, academic coping, and literacy achievement. Based upon the information found in the subsequent literature review, the hypothesized model is a moderated mediation model. The model is seeking to investigate whether T2 problem solving academic coping strategies mediate the relationship between T1 perceived stress and T3 academic outcomes (i.e., literacy achievement and emotional engagement) and whether perceived stress moderates the relationship between academic coping factors and academic achievement (Figure 3). The following literature review will describe the empirical support for the hypothesized pathways of the moderated mediation model.

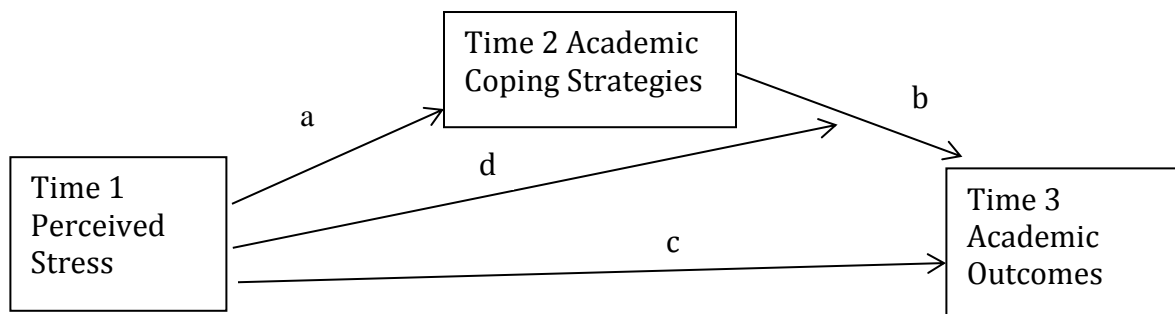


Figure 3. Hypothesized moderated mediation model.

High levels of perceived stress have been demonstrated to have a negative impact on academic outcomes (Albeg & Castro-Olivo, 2014; Alva & Reyes, 1999; Goodman, Miller, & West-Olatunji, 2012; Herbers, Cutuli, Supkoff, Heistad, Hinz, & Masten, 2012; Ma, 2000; McDonald, Joos, & Wadsworth, 2015; Saltzman, Pynoos, Layne, Steinberg, & Aisenberg, 2001; Schwartz, Lansford, Dodge, Pettit, G. & Bates, 2013;

Thompson & Massat, 2005; White, 1982). Immigrant students are at particular risk for experiencing high levels of stress (Sirin, Ryce, Gupta, & Rogers-Sirin, 2013; Suárez-Orozco & Suárez-Orozco, 2001).

This study's model (Figure 3) posits that perceived stress and academic outcomes have been shown by previous research to be negatively correlated (Path C). However, this relationship may be mediated by academic coping, wherein, perceived stress has an impact on *problem-solving* academic coping in a negative direction (Path A) which, in turn, is predicted to have an impact on academic outcomes (Path B). The strength of coping's impact on academic outcomes may depend on stress level – *problem-solving* academic coping may have more of a positive impact on achievement with lower levels of stress than with higher levels of stress (Path D).

Moderated mediation. Mediation is an indirect effect that occurs when the relationship of an independent variable (X) on a dependent variable (Y) is explained by a mediator variable (M). The X variable's relationship with the Y variable is better explained by the X affecting the M variable which, in turn, affects the Y variable (Preacher, Rucker, & Hayes, 2007). The strength of this indirect effect is often referred to as the mediation effect. (Hayes, 2013; MacKinnon, 2000; Preacher, Rucker, & Hayes, 2007). A simple mediation model can be found in Figure 4.

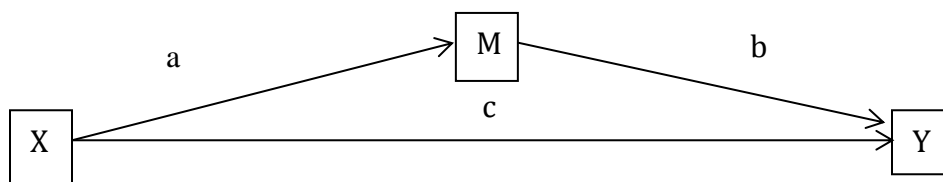


Figure 4. Simple mediation model.

Moderation occurs when the strength of the relationship between an independent variable (X) and a dependent variable (Y) varies due to a moderating variable (W). In moderation, the W (moderator) variable will interact with the X variable in predicting the relation of X with Y (Preacher, Rucker, & Hayes, 2007). A simple moderation model can be found in Figure 5.

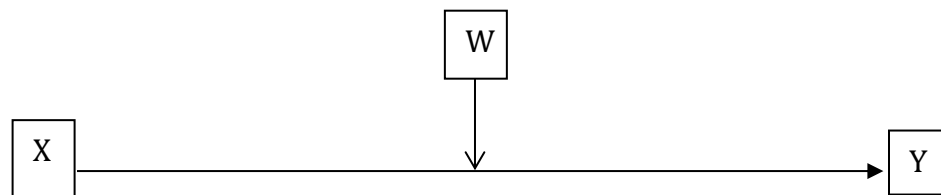


Figure 5. Simple moderation model.

A moderated mediation model determines whether a mediation model, or part of the mediation model, is contingent upon a moderator variable. A moderated mediation model attempts to better explain the paths of a mediation analysis by explaining how the paths of a mediation model may differ for certain individuals (Hayes, 2013).

Hypothetically moderator(s) could affect the relationship between X and M, M and Y, or both X and M and M and Y (Hayes, 2013). In fact, some researchers argue that although they are not always measured, almost every relationship between two variables has a moderator (Hayes, 2013; MacCallum, 2003). The moderated mediation model in this study can be found in Figure 3, wherein the moderation influence is depicted by pathway

d on the relationship between T2 academic coping strategies and T3 academic outcomes (path B).

Coping in the face of stress (Path A). Overall, (with few exceptions) previous research suggests that student stress has a negative relationship with *problem-solving* coping (i.e., strategizing and help seeking strategies; Belizaire & Fuertes, 2011; Crego, Carillo-Diaz, Armfield, & Romero, 2016; MacCann, Lipnevich, Burrus, & Roberts, 2012; Tolan et al., 1997). People with higher levels of perceived stress tend to use *problem-solving* coping strategies less frequently, such as *strategizing* and *help-seeking* strategies. Lazarus' cognitive appraisal theory of coping provides support for path A in that it suggests that individuals tend to use coping strategies consistent with how they appraise a stressor (Lazarus, 1993). If individuals view a stressor as being overwhelming or unmodifiable (i.e., higher levels of perceived stress), they tend to use less *problem-solving* coping strategies.

For example, Crego et al. (2016) analyzed the perceived stress, coping strategies, self-efficacy, and grades of students in dental school. The researchers found that students who used more rational problem-solving ways of coping tended to have lower levels of perceived stress and higher levels of self-efficacy in class.

An example of the negative relationship between encountering stressful events and *problem-solving* coping strategies is found in the research by Gonzales et al. (2001). In a sample with 445 seventh and eighth grade students living in an urban environment, Gonzales et al. (2001) found a significant negative correlation between active coping and family stress, peer stress, and community stressful events. The researchers discuss how the students frequently encounter macro-stressors outside of their control such as high

rates of crime, economic instability, family fights, and under-resourced schools which affect the coping strategies students use both in school and outside of it.

Pilar Matud (2004) found that for both adult men and women, *rational coping* (i.e., *problem-solving* coping; Roger, Jarvis, & Najarian, 1993) had a negative relationship with uncontrollability of life events but that the relationship was stronger (and significant) for women. Women in her study rated their lives as more out of their control and more negative than men. They also tended to use more emotional and avoidance coping styles than men.

Stress and help-seeking strategies. Several studies have also shown less use of *help-seeking* coping strategies among populations (especially immigrant populations) experiencing higher levels of stress both in and out of school (Cabrera, Rashwan-Soto, & Valencia, 2016; Suldo, Shaunessy, & Hardesty, 2008). This relationship may be partly due to people with high stress levels also having cultural characteristics downplaying the need for help-seeking, such as valuing independence, lacking English proficiency, feeling shame about publicly asking questions, or respecting the teacher and her time (Cabrera, Rashwan-Soto, & Valencia, 2016; Chu, & Walters, 2013; Kormi-Nouri, MacDonald, Farahani, Trost, & Shokri, 2015). Overall, research with diverse students in multiple grades support the assertion in Path A of the moderated mediation model that there is a negative relationship between perceived stress and academic problem-solving strategies.

Effect of Adaptive Coping Strategies on Academic Outcomes (Path B)

As evidenced by much of the background section previously described, numerous research studies suggest that the use of *strategizing* and *help-seeking* academic coping strategies promote better academic outcomes such as GPA or engagement (MacCann,

Fogarty, Zeidner, & Roberts, 2011; Reschly, Huebner, Appleton, & Antaramian, 2008; Ryan, Hicks, & Midgely, 1997; Skinner, Pitzer, & Steele, 2013; Struthers, Perry, & Menec, 2000).

For many students, coping strategies, such as *strategizing* or *help-seeking* strategies, will likely improve academic achievement outcomes (Struthers, Perry, & Menec, 2000). This finding has been shown with students from elementary school to college (Skinner, Pitzer, & Steele, 2013; Skinner & Wellborn, 1997; Struthers, Perry, & Menec, 2000). *Problem-solving* coping techniques may lead to academic success by allowing students to mentally overcome academic struggles (Neff, Hsieh, & Dejitterat, 2005), seek out answers to difficult questions or problems by asking questions (Ryan, Hicks, & Midgely, 1997; Skinner, Pitzer, & Steele, 2013), or better manage disorganization and time management difficulties by better planning out their time (Skinner, Pitzer, & Steele, 2013).

Students who lack strategizing and organizational skills to plan out steps to solve their academic problems under normal levels of stress have been shown to be less successful academically. For example, several studies among elementary, middle school, and high school students show that those who plan out steps to solve their school work (i.e., by using a graphic organizer in school) are more successful academically than students who do not plan out steps (Hawk, 1986; Griffin & Tulbert, 1995; Kim, Vaughn, Wanzek, & Wei, 2004).

As previously mentioned, *help-seeking* academic coping strategies have also been associated with higher levels of academic performance (Skinner, Pitzer, & Steele, 2013). Seeking assistance when there is a question can help the student solve immediate

problems with his/her schoolwork and gain more academic strategies that can eventually help him/her become a more self-reliant student (Newman & Schwager, 1993).

Asking questions can also help students maintain their engagement and enthusiasm in the academic process and re-engage with difficult academic problems (Pitzer, 2015; Skinner & Wellborn, 1997). Research by Good, Slavings, Harel, & Emerson (1987) suggest that students in elementary school who are higher achievers tend to ask more questions than lower achievers. Other research by Schenke, Lam, Conley, & Karabenick (2015) conducted with a sample of middle school and high school students found that, for both boys and girls, the more the students sought out support from the teacher and instrumental help, the greater gains they made on their academic achievement.

In sum, for many students *problem-solving* coping strategies such as *strategizing* or *help-seeking* may be helpful in improving academic achievement. However, as described next, perceived stress may moderate this relationship – *problem-solving* coping strategies may not be as effective at improving academic achievement in students with higher levels of perceived stress.

Stress as a Moderator of Coping Strategies on Academic Outcomes

As previously described in the literature review section on the influence of academic coping on academic achievement, the effectiveness of coping strategies may vary due to how individuals perceive a stressor (Blaxton & Bergeman, 2017). The relationship between coping and achievement may differ by perceived stress level. For some students experiencing high levels of perceived stress, the academic coping strategies of *strategizing* and *help-seeking* may not prove to be as effective at improving

academic achievement and school engagement (Crean, 2004; Gonzalez, Sandler, & Friedman, 2001) and the use of avoidance or emotional regulation-related academic coping strategies may be associated with higher levels of academic achievement (Steward, Jo, Murray, Fitzgerald, Neil, Fear, & Hill, 1998; Steward, Steward, Blair, Jo, & Hill, 2008).

Research by Compas, Banez, Malcarne, & Worsham (1991) and Lazarus & Folkman (1984) suggest that although problem solving coping strategies are often effective at reducing stressors, they are not as effective when stressors are viewed as unmodifiable. Several items in the perceived stress scale in this study (Appendix B) look at how modifiable the students perceive their stressors to be. These items include: “How often did you feel like you could NOT do anything to change the way things were going?” and “Think about a time there were things you could NOT change. How often did you get mad about that?” Under conditions of high perceived stress, *problem-solving* coping strategies may be less effective as it is more difficult to solve the underlying problem.

In conclusion, for many students *strategizing* and *help-seeking* academic coping strategies are likely to be associated with improved literacy achievement and emotional engagement. However, for students with high levels of perceived stress, these *problem-solving* academic coping strategies may not be associated with increased academic outcomes.

Summary and Hypotheses

This dissertation is seeking to analyze the relationship among perceived stress, academic coping, and academic outcomes. Self-determination theory and the cognitive

appraisal model provide theoretical support for this research. Self-determination theory provides evidence suggesting that *help-seeking* and *strategizing* items may help students reengage with the classroom material and improve academically. The cognitive appraisal model suggests that people tend to use different coping strategies depending on how modifiable they perceive the stressor to be; problem-solving strategies tend to be more common and effective when stressors are perceived as modifiable and less common and effective if they are unmodifiable (Compas, Banez, Malcarne, & Worsham, 1991; Lazarus & Folkman, 1984). Therefore, in this dissertation *problem-solving* coping strategies may be most beneficial for students with lower levels of perceived stress.

I examined a moderated mediation model (Figure 3) to determine whether T2 *problem-solving* academic coping strategies mediate the relationship between T1 perceived stress and T3 literacy achievement and whether perceived stress moderates the relationship between *problem-solving* coping and academic achievement. I conducted exploratory factor analysis (described in the Methods Section) to create the modified academic coping measure.

Low-income, immigrant, dual language students are at risk for high levels of stress (e.g., Berry, 1997; Sirin et al., 2013; Suárez-Orozco & Suárez-Orozco, 2001), and for many of these students, academic coping strategies may help them succeed academically; however, for some students with especially high levels of stress, the coping strategies may be insufficient to improve academic achievement. It is unclear as to whether *help-seeking* or *strategizing* coping strategies may help students with higher stress levels succeed academically.

This paper does not follow or adhere to a cultural deficit model (Irizarry, 2009). A cultural deficit model tries to explain the difficulties students of color face in school by identifying characteristics within the students' families or culture. The model blames the student's family's values and background for failure in school rather than emphasize strengths within the culture.

A cultural deficit model also fails to address system-wide change necessary for increasing academic success for all students. In contrast, this paper does not look at low or high levels of coping from a deficit perspective. One of the ultimate goals of this paper is to determine how students can improve their literacy achievement and ultimately how schools can use this information to provide all students with the opportunities and skills to better themselves.

Hypotheses

- 1) T2 academic coping will positively correlate with T3 academic outcomes (Figure 2)
 - a. Both T2 coping factors will have positive correlations with T3 literacy achievement, T3 student-reported emotional engagement, and T3 teacher-reported emotional engagement.
- 2) Problem-solving academic coping mediates the relationship between perceived stress and academic outcomes. T1 perceived stress will moderate the strength of the mediation path between T2 academic coping and T3 academic outcomes (Figure 3).

Chapter 3: Methods

Procedure

The study was conducted at school A (pseudonym) in 2014 under the guidance of the Internal Review Board at the university and the local school district's Office of Shared Accountability. This dissertation is part of a larger study which examined relations among variables such as perceived stress, grit, teacher and peer support, and academic outcomes in dual language elementary school students. Members of the lab team collected data from the students, entered the data into SPSS, and analyzed the data. Data from three time points was taken. Time point 1 was collected from January to February 2014. Time 2 was collected from March to April 2014, and Time 3 was collected from May to June 2014. The data was collected in sequential fashion so that there were at least a couple of weeks in between each data collection per participant.

To recruit participants for the study, research team members from the university attended PTA meetings and school assemblies to explain the study to parents and used a translator to communicate with largely Spanish-speaking parents. Consent forms sent home with students were translated into Spanish for Spanish-speaking parents. Research team members also went to students' classes during breakfast to provide information about the study.

The students were interviewed one-on-one by graduate students for 15-20 minutes (during non-instructional time) about their coping, stress, and engagement in school. The interviewer read the items out loud as they pointed to the items with the participants; if needed, the interviewer provided examples and answered questions to improve the students' comprehension of items. This interview was followed by a three-minute literacy achievement reading activity. The interview was conducted in either English or Spanish,

with a small number of interviews conducted in Spanish. However, the three-minute reading activity was performed only in English.

Sample

The sample is comprised of 146 third through fifth grade students. The school is located in a suburban district and serves low-income families. Ninety-five percent of the students receive free or reduced priced lunch. Although the school district did not give the research team permission to ask about immigration status, the administration estimates that approximately 80% of the student body is second generation immigrant students and the majority of the remaining twenty percent are first generation immigrant students.

The ethnicity breakdown of the students is found in Table 5. In the sample, 53% of the students are female and 97% of the sample report being dual language learners. Sixty-one percent of the sample indicated that the primary language in the house is Spanish, and 21% percent reported that the primary language at home is English. Other languages spoken by students in the sample include French (2.7% of sample), Vietnamese (1.4% of sample), and other (13.7% of sample). Many of these bilingual students are receiving ESOL support at school.

To determine dual language and non-dual language status, we coded the primary language spoken with parents at home. In the literature, dual language learner operationalization ranges from more to less inclusive. For instance, the definition has ranged from “a child living in a household where at least one person older than five years speaks a non-English language” (Murphey, Guzman, & Torres, 2014) to “children who speak a language other than English at home” (Park, O’Toole, & Katsiaficas, 2017).

Using student and parent-report, we chose a less inclusive operationalization and coded students as dual language learners if they spoke a non-English language with at least one parent.

Table 5

Student Races/Ethnicities (Column Percentages)

<u>Race/Ethnicity</u>	
Black/African American	14.4
White/European American	1.4
Latino/Hispanic	67.8
Asian American/Pacific	8.2
Islander	
Multiracial/Multiethnic	2.7
Other	1.4
Not Reported	4.1

Note. $N = 146$.

Measures

Perceived stress. The perceived stress scale administered to the students was a modified version of the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). The modified items can be found in Appendix B. The original scale was a fourteen-item measure that was designed to determine "the degree to which individuals appraise situations in their lives as stressful" (Cohen, 1986, p. 716). The authors found it to have adequate reliability on a college aged sample ($\alpha = .84 - .86$; Cohen et al., 1983). Subsequent research on the reliability and validity of the scale identified a two-factor solution for the scale with the negatively phrased items comprising one factor and perceived coping ability comprising the second factor (Golden-Kreutz, Browne, Frierson,

& Anderson, 2004; Martin, Kazarian, Breiter, 1995; Suldo, Shaunessy, & Hardesty, 2008).

As the items for the original Perceived Stress Scale were designed for students with at least a junior high level of education (Cohen, Kamarck, & Mermelstein, 1994), items in this study were modified to be more understandable for elementary school students. The questions ask students to think about how frequently they encounter situations that were out of their control and unchangeable and how stressful they perceive the situations. An exploratory factor analysis was conducted on the items in this modified scale to determine whether the items used comprise different factors. The results of the factor analysis can be found in the Results section, and the factor matrix can be found in Appendix D.

Academic coping. This dissertation is seeking to augment and adapt upon an existing academic coping measure created by Skinner, Pitzer, & Steele (2013). The modified academic coping measure was designed to look at the types of coping skills students use in school. This research is attempting to determine if the modified items load onto separate *help-seeking* and *strategizing* factors—similar to the academic coping factors created by Skinner, Pitzer, & Steele (2013).

In their research with students grades 3-6, Skinner et al., (2013) found that the *strategizing* items had adequate reliability ($\alpha = .67-.78$), and the *help-seeking* items also had adequate reliability ($\alpha = .72-.78$). Further research with students grades 3-5 also found adequate reliability for the *strategizing* items ($\alpha = .65$) and *help-seeking* items ($\alpha = .66$; Pitzer, 2015). Similarly, the items in this research are expected to load onto two factors, *strategizing* and *help-seeking*.

In their research, Skinner, Pitzer, and Steele (2013) defined *strategizing* coping as “attempts to figure out what to do to solve problems or prevent them in future encounters” and *help-seeking* as “going to teachers or other adults for instrumental aid in understanding material or in figuring out how to learn more effectively” (p. 814).

The hypothesized modified academic coping measure uses different items for the factors than the original scale by Skinner et al. (2013). The modified measure used in this study uses the same definition of the *strategizing* factor but a slightly different definition for the *help-seeking* factor. The definition used for the *help-seeking* factor in the modified coping measure is “going to knowledgeable adults or peers for instrumental aid in understanding material or in figuring out how to learn more effectively.”

Skinner and colleagues’ as well as others’ academic coping studies have not analyzed to whom students ask questions or reasons that students do not strategize or seek out help. In the present research, I heavily modified the items created by Skinner et al. (2013) by adapting and adding to their scales (see Appendix A). To adapt the items in the new measure, I wanted to create reverse scored items so that students had to think carefully about their responses. I also wanted to create additional items as I thought it was important to consider to whom students ask questions (e.g., teachers or peers) and provide more context for and better explain the reasons that students do or do not ask questions in class (i.e., being anxious to approach the teacher; See Appendix A).

For example, items 1 and 2 of the modified measure ask the students whether they seek out help from teachers or from peers if they are having difficulty understanding work in class. In the original measure, however, there were only items assessing whether students seek out help from teachers. This may be important as students who may be too

shy to ask questions to teachers may be more comfortable asking trusted peers for help. Furthermore, cultural differences may affect a student's comfort level in asking questions of teachers in class (Chu, & Walters, 2013; Kormi-Nouri, MacDonald, Farahani, Trost, & Shokri, 2015). These new *help-seeking* items may make the questionnaire more culturally relevant and reveal differences among the coping strategies of students from various cultures.

Item 3 also provides additional context for why students may not use a certain coping strategy. The item asks students if they do not seek out help because they are too nervous to talk to the teacher. A student who has anxiety talking to a teacher may benefit from alternative coping strategies or need support talking with a teacher; however, a student who is not asking questions for a different reason may not need this same support.

I further modified the scale created by Skinner et al. (2013) by changing the wording of items and adding reverse coded items such as "You ignore the problems you have at school." Although several authors note downsides to reverse coded items, such as reverse coded items frequently clustering into separate factors, the reverse coded items are useful in altering contrived response sets used by participants as it forces them to carefully consider their responses and the meaning of the items (Carlson, et al., 2011).

I conducted an exploratory factor analysis with the newly created items to see whether the items form latent factors. The results of the exploratory factor analysis can be found in the Results section. The factor matrix can be found in Appendix E.

Emotional engagement. The emotional engagement of the students was analyzed through the administration of the self-report five item Engagement vs. Disaffection with Learning Scale (EvsD; Skinner, Furrer, Marchand, & Kindermann, 2008) and a modified

teacher report version of the scale. The internal consistency of the self-report scale was found to be adequate to high in a primarily Caucasian elementary student sample ($\alpha = .73 - .82$; Skinner, Kindermann, & Furrer, 2009). The scale items and associated likert scales are found in Appendix E and include items such as “When we work on something in class, I feel interested,” or “Class is fun.”

I conducted an exploratory factor matrix for both the student-reported emotional engagement scale and the teacher-reported emotional engagement scale. The results of the EFAs can be found in the results section, and the factor matrixes can be found in Appendix F. The reliability of the scales (i.e., self-report and teacher) in this study can be found in Table 6 in the results section.

Literacy achievement. The literacy achievement of the students was assessed via the TOSREC (Wagner, Torgesen, Rashotte, & Pearson, 2010). While completing the TOSREC, the students had three minutes to determine whether the sentences were true or false. Scoring was based both on the number of items completed and the accuracy of the answers. The TOSREC tests students’ reading fluency, reading comprehension, and general knowledge. Research by Wagner et al. (2010) suggests that the test has high reliability and good convergent validity with achievement tests like the Woodcock Johnson III. The TOSREC has also been shown to have high accuracy in predicting who meets the grade level performance benchmarks for state reading assessments (Johnson, Pool, & Carter, 2011).

Analysis Approach

Missing data. For my analysis, (as previously mentioned) there were 146 participants. A limited number of the participants skipped items for a variety of reasons

including not understanding the meaning of items or not remembering the answers. In order to see whether there was a pattern in the missing data, the Little's MCAR test was performed using the SPSS 24 software. The Little's MCAR test looks at whether the data is missing completely at random (i.e., that the probability of an incomplete data point is unpredictable; Myers, 2011). The resulting Chi-square value $\chi^2(32) = 33.19, p = .41$ indicates that we failed to reject the null hypothesis and that the data are likely missing at random.

I used a listwise deletion procedure (on the total scores) for the analyses. In listwise deletion, a participant is deleted from the analysis if any data point is missing. The PROCESS macro requires listwise deletion for its analysis (Hayes, 2018). In order to increase the number of participants without missing "total scores," if a participant completed 6 or 7 items (out of the 8) on the academic coping or perceived stress measures, then the total average academic coping or total average perceived stress score was manually calculated for the participant.

The average total score for T2 academic coping was manually calculated for two participants in the sample. The average total score for T1 perceived stress was manually calculated for four participants. After the average scores were manually calculated for the variables, there were no missing T1 total perceived stress scores, two missing T2 academic coping total scores, two missing T3 student-reported emotional engagement scores, six missing T3 TOSREC scores, and no missing T3 teacher-reported emotional engagement scores.

Analytic procedures. Power analyses were conducted prior to the mediation, moderation, and moderated mediation analyses, using the G*Power software. The power

analyses were conducted to determine the number of participants required for this study's multiple regression models.

The moderation and moderated mediation analyses both have six predictor variables (i.e., IV, mediator/moderator, interaction, T1 academic outcomes, age, and gender). The mediation analyses have five predictor variables (i.e., IV, mediator, T1 academic outcomes, age, and gender). The power analysis revealed that 146 participants were required to detect an effect size of $f^2 = .15$ (medium effect size) with a power of .95 and a Type I error rate of .05 with 6 predictor variables in the multiple regression models. The power analysis also showed that 138 participants were required to detect an effect size of $f^2 = .15$ (medium effect size) with a power of .95 and a Type I error rate of .05 with 5 predictor variables.

However, 1050 participants would be required to detect a small effect size of $f^2 = .02$ with six predictor variables, and 995 participants would be required to detect a small effect size of $f^2 = .02$ with five predictor variables. Without controlling for any variables, 776 participants would be required to detect a small effect size with only two predictor variables (i.e., IV and mediator/moderator). This suggests that this dissertation has enough participants to detect a medium or large effect size in the mediation, moderation, and moderated mediation analyses. However, it does not have enough participants to detect a small effect size in these analyses.

Descriptive characteristics of the data (i.e., means and standard deviations) were run using the SPSS 24 software. Frequency data were analyzed comparing gender and grade differences in the variables. Specifically, the stress levels, literacy ability levels, and the amount of academic coping strategies used by students in different grades and

genders were put into a table and analyzed using independent sample t-tests. Two-tailed bivariate correlations were conducted to examine correlations among the relevant study variables to help determine if academic coping was related to the outcome variables.

Exploratory factor analysis. As previously described in the Measures subsection, in order to assess the number of latent factors that account for the questionnaire items, I used exploratory factor analysis. The exploratory factor analysis used a direct oblimin rotation procedure. Direct oblimin rotation is a type of oblique rotation. Oblique rotations assume that the latent factors are correlated (Brown, 2009a) which is likely the case in this dissertation as both *strategizing* and *help-seeking* coping strategies are *problem-solving* types of coping strategies. The number of factors retained after the factor analysis was determined based on the loadings of the items on the factors and whether the factors made conceptual sense. Items that had loadings of .32 or greater and did not cross-load were retained on the designated factor. A minimum loading of .32 was decided upon as this is equal to about 10% of overlapping variance with the other items in the factor (Costello & Osborne, 2005; Tabachnick & Fidell, 2001).

The internal consistency reliabilities of the factors were determined based on their Cronbach Alphas. The internal consistency of the scales refers to the average correlations of the items found in the scales (Santos, 1999). The value of the alpha will vary based on the number of items, the inter-relatedness of the items, and the dimensionality of the scale. Small alpha values may indicate that there are a low number of questions, poor interrelatedness between items, or a scale not being homogeneous (Tavakol & Dennick, 2011). The test-retest reliability of the academic coping scale was measured by correlating the participant's responses at T2 and T3. The correlations can be found in

Table 8. To measure the predictive validity of the created academic coping factor, the factor was correlated with the T3 academic outcome variables. The results can also be found in Table 8.

Moderated mediation. The analysis model is found in Figure 1 in the background section. Moderated mediation occurs when “the strength of an indirect effect depends on the level of some variable, or in other words, when mediation relations are contingent on the level of the moderator (Preacher, Rucker, & Hayes, 2007, p. 193).

For the mediation analysis, I predicted that (after controlling for previous academic outcome levels and two demographic variables) T1 perceived stress levels influence T3 academic outcomes but that this relationship is mediated by T2 academic coping. The model predicts that T1 perceived stress influences T2 academic adaptive coping strategies in a negative direction (**Path A**). This, in turn, influences the T3 academic outcomes of the student (**Path B**). I conducted the mediation analysis using the PROCESS macro for SPSS (Hayes, 2012, 2013). The mediation analysis was based on Hayes model 4 (Hayes, 2018).

The PROCESS macro estimates the size of the indirect of effect of X on Y. This tested if the relationship between Time 1 (T1) perceived stress and Time 3 (T3) literacy was mediated by Time 2 (T2) academic coping. The strength of the indirect effect was measured by bootstrapped confidence intervals. Bootstrapped confidence intervals typically have fewer Type 1 error rates than the products-of-coefficients method for examining indirect effects (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2008).

Moderation analyses were also conducted using the PROCESS macro. For the moderation analyses, the model was based on Hayes model 1 (Hayes, 2018). The moderation analysis was analyzing whether T1 perceived stress moderated the relationship between T2 academic coping and T3 academic outcomes. The PROCESS macro conducted multiple mediation analyses to determine whether the interaction significantly increased the model's ability to explain the variance of the academic outcomes (R^2) beyond the main effects. A significant change in R^2 due to the interaction would support a significant moderation. Simple slopes at different points of the moderator (T1 perceived stress) were also provided to see if the conditional effects of X on Y change at different values of the moderator.

To measure the moderated mediation model (figure 1), I used the PROCESS macro for SPSS (Hayes, 2015). The analysis used Hayes (2013) model 74. This model demonstrates the independent variable (X) moderating the effect of the mediator variable (M) on the dependent variable (Y). Hayes (2015) recommended the use of an index of moderated mediation to test the significance of the effect. The index of moderated mediation is found by multiplying the regression coefficients. If a moderating variable (perceived stress) changes the value of the product of Path A and B, then it is a significant moderator of the mediating relation. (Macneil, Kosberg, Durkin, Dooley, DeCoster, & Williamson, 2010). Hayes (2015) recommends the use of bootstrap confidence intervals to measure the significance of the index.

Chapter 4: Results

Exploratory Factor Analyses

The exploratory factor analyses for the perceived stress scale, the academic coping measure, the student-reported emotional engagement measure, and the teacher-reported emotional engagement measure used a direct oblimin rotation. The results from the exploratory factor analysis of the perceived stress scale showed that the best factor solution was an eight-item factor as two of the ten original items did not load highly on the factor. The two items that were dropped were both reverse scored items—which previous research suggested tended to not load onto a single factor. The factor matrix from the factor analysis can be found in Appendix D. All of the remaining items had loadings of at least .33. The reliability alpha of .67 can be found in Table 6 along with the alphas of the other measures.

For the exploratory factor analysis of the academic coping measure, the original factor matrix found that three factors had eigenvalues greater than 1. However, the items loaded highly (greater than .32) onto only one of the factors without cross-loading. On a forced two item solution, the reversed scored items formed their own factor. The reversed-scored items were dropped from the analysis.

The best factor solution was a forced one item factor. However, this remaining factor did not have adequate reliability. Two additional related items- one from the agentic engagement scale (Reeve & Tseng, 2011) and one from the behavioral engagement scale (Skinner, Furrer, Marchand, & Kinderman, 2008) were added to the factor analysis: “During class, I ask questions” and “When I’m in class, I participate in class discussions.”

The resulting eight item factor matrix can be found in Appendix E, and the reliability can be found in Table 7 in the results section. The internal consistency was $\alpha = .71$. This alpha is acceptable for the measure in this sample. The factor accounted for 33.87% of the total variance. The test-retest reliability for the factor was found by correlating the scores for the academic coping measure at T2 and T3. The test-retest correlation of $r = .74, p < .01$ provides support that the measure has strong test-retest reliability.

Descriptive Statistics

Table 6 presents the descriptive information and alphas for the predictor and outcome variables for the sample. The alphas for the measures used in this study range from adequate to excellent. Measures with alpha scores of .65 or greater are often considered to have adequate reliability (DeVellis, 2003).

On the TOSREC at the end of the year, students in the sample had a mean score in the 25th percentile. This indicates that the students in the sample had lower literacy achievement scores than most same age students in the TOSREC standardization sample, a representative sample of students in the United States. This is unsurprising as the sample in this study is comprised of primarily DLL students who are continuing to learn English.

Table 7 presents the mean scores for variables across different grades and genders for the sample. I analyzed differences among specified groups for descriptive purposes. In the sample, the third graders on average performed ten percentile points higher than the fifth graders at the school on the T3 TOSREC. There was a significant difference between the T3 TOSREC scores of the third graders and students in 4th and 5th grade

$t(138) = -2.12, p < .05$. There was also a significant difference between the T3 student-reported emotional engagement ratings of the third graders and students in 4th and 5th grade $t(128.04) = -3.59, p < .01$ and between the T3 teacher-reported engagement scores of the third graders and students in 4th and 5th grade, $t(126.15) = -2.98, p < .01$.

Additionally, males had higher levels of T2 academic coping than females $t(142) = -2.58, p < .05$. There were no other statistically significant differences across the grades or genders.

Table 6

Descriptive Statistics of Predictor and Outcome Variables

Measure	Alpha	Mean(SD)
PSS1	.67	2.49(.65)
Cop2	.71	3.60(.69)
Eng1	.72	4.31(.67)
Eng3	.78	4.13(.70)
Teng1	.94	4.13(.88)
Teng3	.94	4.17(.81)
TOSREC3	N/A	25.60(23.90)

Note. Bold-faced alpha coefficients meet an acceptable internal reliability level of .65 or higher (DeVellis, 2003). Potential range for all measures except TOSREC is 1-5. Possible range for TOSREC = 1-100. TOSREC3 score is percentile. PSS1 = 8 item perceived stress scale at time point 1. Cop2 = 8 item academic coping measure at time point 2. EngX = five item Engagement vs. Disaffection with Learning Scale (EvsD; Skinner, Furrer, Marchand, & Kindermann, 2008) at time point X. TengX = modified teacher report emotional engagement scale at time point X. TOSREC3 = Test of Silent Reading Efficiency and Comprehension percentile score (Wagner, Torgesen, Rashotte, & Pearson, 2010) at time point 3.

Table 7

Descriptive Statistics of Designated Groups

Group	PSS1	Cop2	Eng3	Tos3	Tenga3
Male	2.40	3.75	4.11	23.37	4.04
Female	2.57	3.46	4.14	27.66	4.21
Third	2.53	3.55	4.38	31.37	4.42
Fourth	2.37	3.50	4.01	22.57	4.07
Fifth	2.56	3.73	3.97	22.26	4.00

Note. All scores except TOSREC 3 scores are reported as means. TOSREC 3 scores are percentile. Third = students in third grade. Fourth = Students in fourth grade. Fifth = Students in fifth grade. PSS1 = 8 item perceived stress scale at time point 1. Cop2 = 8 item academic coping measure at time point 2. Eng3 = five item Engagement vs. Disaffection with Learning Scale (EvsD; Skinner, Furrer, Marchand, & Kindermann, 2008) at time point 3. Teng3 = modified teacher report emotional engagement scale at time point 3. Tos3 = Test of Silent Reading Efficiency and Comprehension percentile score (Wagner, Torgesen, Rashotte, & Pearson, 2010) at time point 3.

Correlations

Bivariate correlations among the study variables were conducted. And, to test hypothesis 1, which states that the T2 academic coping factor will correlate with T3 academic outcomes, correlations were run among the relevant study variables. These correlations can be found in Table 8 below.

The **first hypothesis** was partially supported. The eight-item academic coping factor (previously described) had a significant correlation with time 3 student-reported emotional engagement $r = .41, p < .01$. However, contrary to expectations, T2 academic coping did not have a significant correlation with T3 TOSREC or T3 teacher-reported emotional engagement (Table 8).

Follow-up analyses revealed that the relationship between T2 academic coping and T3 TOSREC remained non-significant for both males and females and for students in all grades. However, the relationship between T2 academic coping and T3 teacher-reported emotional engagement was significant for males $r = .29, p < .05$ but not for females, and it was also significant for students in third grade $r = .28, p < .05$ but not students in fourth or fifth grade. The eight-item perceived stress factor had a significant negative correlation with every outcome variable.

Table 8

Correlations among Study Variables

Variable	Tos1p	Tos3p	Cop2	Cop3	PSS1	Eng3	Eng1	Teng3	Teng1	Age	Gender
Tos1p	1										
Tos3p	.79**	1									
Cop2	.09	.07	1								
Cop3	.10	.10	.74**	1							
PSS1	-.22**	-.21*	-.25**	-.17*	1						
Eng3	.21*	.20*	.41**	.57**	-.23**	1					
Eng1	.15	.14	.38**	.36**	-.40**	.62**	1				
Teng3	.27**	.27**	.13	.11	-.27**	.29**	.31**	1			
Teng1	.30**	.32**	.10	.07	-.18*	.28**	.28**	.75**	1		
Age	-.30**	-.18*	.02	-.03	-.01	-.28**	-.18*	-.18*	-.25**	1	
Gender	.11	.09	-.21*	-.20*	.13	.02	.03	.15	.14	-.12	1

Note. * $p < .05$; ** $p < .01$. PSS1 = 8 item perceived stress scale at time point 1. Cop(X) = 8 item academic coping measure at time point X. Eng(x) = five item Engagement vs. Disaffection with Learning Scale (EvsD; Skinner, Furrer, Marchand, & Kindermann, 2008) at time point (x). Teng3 = modified teacher report emotional engagement scale at time point 3. Tos(x)p = Test of Silent Reading Efficiency and Comprehension percentile score (Wagner, Torgesen, Rashotte, & Pearson, 2010) at time point (x). Gender codings: 0 = male, 1 = female.

Mediation

In order to test the first part of **hypothesis 2**, which states that T2 academic coping will mediate the relationship between T1 perceived stress and T3 academic outcomes, mediation analyses were conducted using the PROCESS macro. Figures depicting the coefficients, t statistic, and significance of the paths in the mediation models can be found in Figures (6-8). These mediation models show the relationships

among T1 perceived stress, T2 academic coping, and T3 academic outcomes (i.e., TOSREC emotional engagement, and teacher-reported emotional engagement). I controlled for the subjects' age, gender, and T1 of the outcome variable. The indirect effect was not significant for any of the three mediation models after controlling for the demographic information and T1 variables.

However, when only controlling for age and gender (and not T1 student-reported engagement) the indirect effect of the mediation model with T2 academic coping mediating the relationship between T1 Perceived Stress and T3 student-reported engagement was significant: $b = -.09(.04)$, 95% bootstrap confidence interval $(-.19, -.03)$. However, the indirect effect of the other mediation models remained non-significant without controlling for T1 academic outcomes, age, and gender.

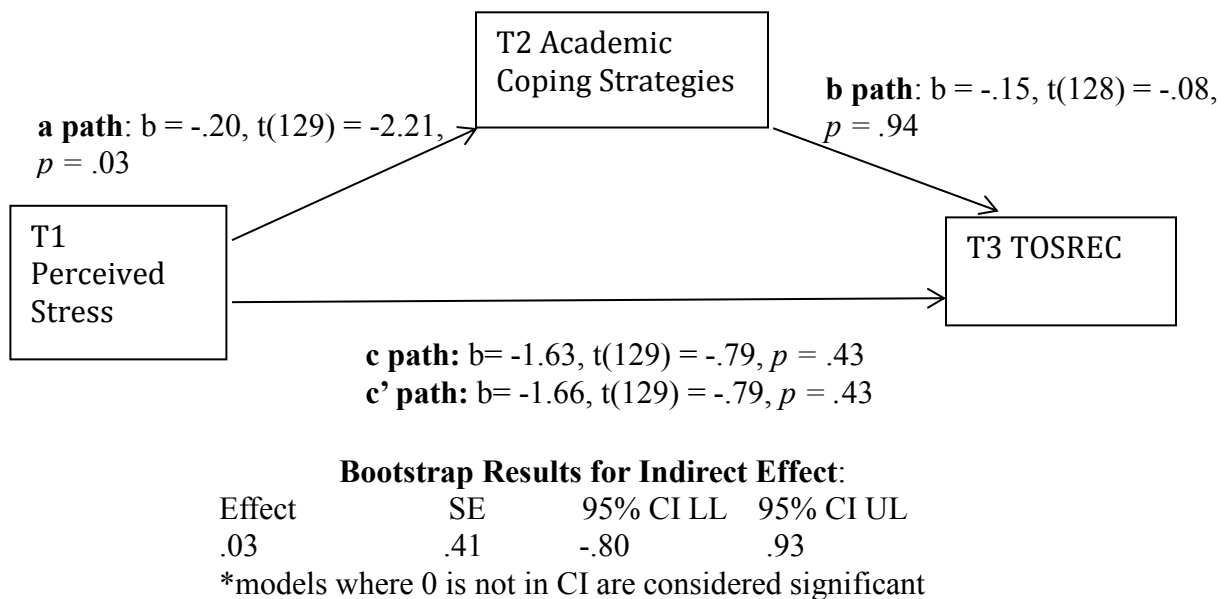


Figure 6. Mediation of perceived stress T1 and TOSREC T3 by academic coping T2. The variables that were controlled for include: TOSREC T1, age, and gender.

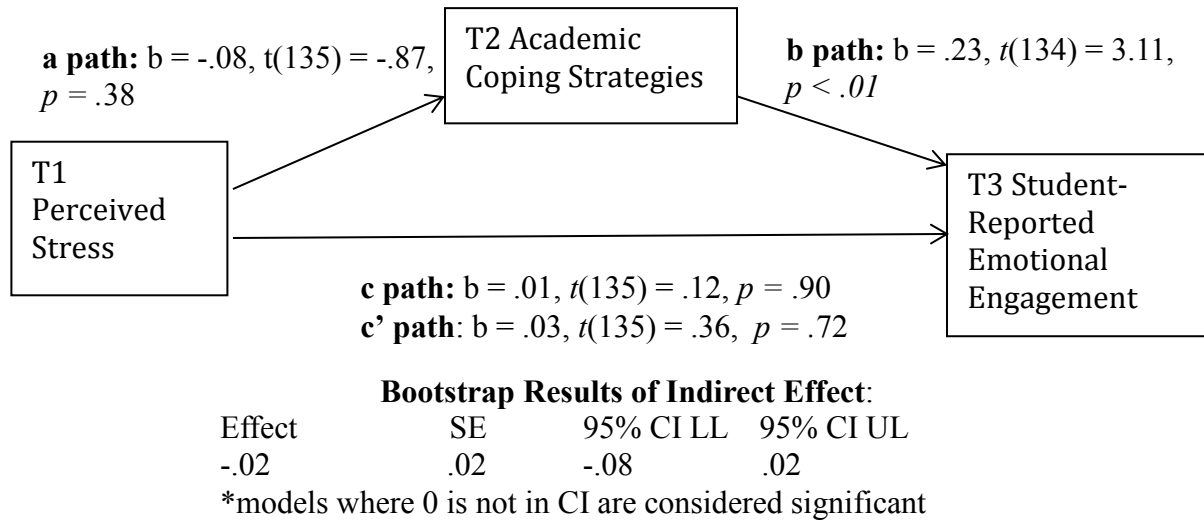


Figure 7. Mediation of perceived stress T1 and emotional engagement T3 by academic coping T2. The variables that were controlled for include: Student-reported emotional engagement T1, age, and gender.

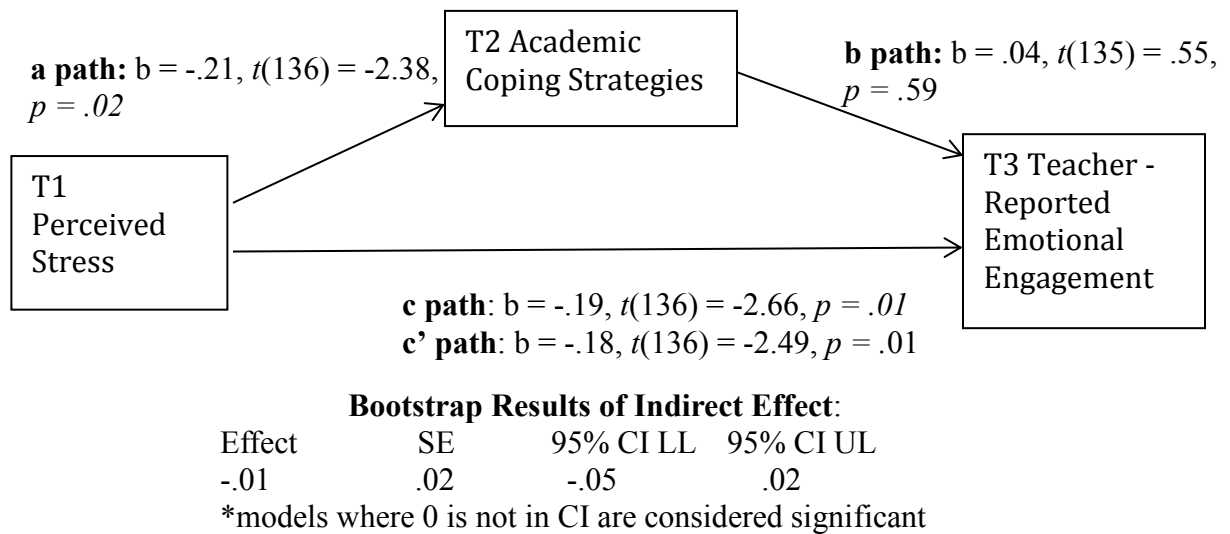


Figure 8. Mediation of perceived stress T1 and teacher-reported emotional engagement T3 by academic coping T2. The variables that were controlled for include: T1 teacher-reported emotional engagement, age, and gender.

Moderation Analyses

In order to test whether T1 perceived stress moderates the relationship between T2 academic coping and T3 academic outcomes (while controlling for T1 academic outcomes and demographic variables), moderation analyses were conducted using the PROCESS macro, model 1. To reduce multicollinearity, the independent variable and moderation variable were centered using the PROCESS macro. Tests of the moderating effects of T1 Perceived Stress can be found in Table 9, the moderation model summaries can be found in Table 10, and the simple slopes for the effect of X on Y at different values of the moderator (mean and 1 sd above and below the mean) can be found in Table 11. As explained below, moderation was not significant.

In the moderation models, the predictor variables were able to explain between 45% and 62% of the variance of the outcome variables, $R^2 = .45-.62$. The ΔR^2 due to the interaction was non-significant for all three of the moderation models. The ΔR^2 due to interaction shows the effect of the interaction in increasing the ΔR^2 while controlling for the main effects. The non-significant ΔR^2 due to the interaction suggests that moderation is non-significant for all three models as the interactions did not add to the explained variance of the outcome variables beyond the main effects.

As can be seen in Table 11, the relationships between the independent and dependent variables remained consistent for the three levels of the moderator for two of the moderation models. For T3 teacher-reported engagement and T3 TOSREC, the relationship between the IV and DV were non-significant for the three levels of the moderator. For student-reported emotional engagement, the relationship between the IV

and DV was significant at the mean and 1 standard deviation below the mean. It was non-significant at 1 standard deviation above the mean.

Table 9

Tests of the Moderating Effects of T1 Perceived Stress

Model	T3 TOSREC			T3 Student-Reported Emotional Engagement			T3 Teacher-Reported Emotional Engagement		
	b	df	t	b	df	t	b	df	t
Constant	- 13.08	127	-92	3.08	133	4.96**	1.40	134	2.46*
IV (T2 Academic Coping)	-.41	127	-.20	.23	133	3.15**	.04	134	.59
Moderator (PSS1)	-2.09	127	-.98	.04	133	.53	-.17	134	-2.31*
T1 Outcome Variable	.88	127	13.32**	.53	133	6.74**	.66	134	12.18**
(Control Variable) Age	1.98	127	1.37	-.14	133	- 2.79**	.00	134	-.02
(Control Variable) Gender	1.47	127	.53	.06	133	.58	.10	134	1.09
Interaction	3.30	127	1.18	-.08	133	-.78	-.05	134	-.50

Note. * $p < .05$; ** $p < .01$. PSS1 = Perceived Stress T1.

Table 10

Moderation Model Summaries

T3 TOSREC			T3 Student-Reported Emotional Engagement			T3 Teacher-Reported Emotional Engagement		
R²	df	F	R²	df	F	R²	df	F
.62	6, 127	34.99**	.45	6, 133	18.18**	.59	6, 134	32.33**

Note. * $p < .05$; ** $p < .01$.

Table 11

Conditional Effect(s) of X on Y at Values of the Moderator

IV	Moderator	DV	PSS1	Effect	SE	t	p	BootLLCI	BootULCI
Cop2	PSS1	TOSREC	-.67	-2.60	2.87	-.91	.37	-8.28	3.08
Cop2	PSS1	TOSREC	.00	-.41	2.00	-.20	.84	-4.37	3.55
Cop2	PSS1	TOSREC	.67	1.79	2.58	.69	.49	-3.31	6.89
Cop2	PSS1	Eng3	-.66	.28	.10	2.79	.01	.08	.48
Cop2	PSS1	Eng3	.00	.23	.07	3.15	.00	.09	.38
Cop2	PSS1	Eng3	.66	.18	.09	1.94	.05	.00	.37
Cop2	PSS1	Tenga3	-.66	.07	.10	.74	.46	-.12	.27
Cop2	PSS1	Tenga3	.00	.04	.07	.59	.78	-.16	.12
Cop2	PSS1	Tenga3	.66	-.06	.09	-.69	.49	-.25	.12

Note. PSS1 = Perceived Stress T1. Cop2 = Academic Coping time 2. Eng3 = Student-Reported Emotional Engagement T3. Tenga3 = Teacher-Reported Emotional Engagement T3. Controlling for Variables: Academic outcome T1, Gender, Age.

Moderated Mediation

In order to look at the second part of **hypothesis 2** and examine whether the mediation model explaining the relationship of the independent variable to the dependent variable is dependent on the level of the moderator (Macneil, Kosberg, Durkin, Dooley, DeCoster, & Williamson, 2010), moderated mediation analyses were performed using the PROCESS macro. As previously described, the index of moderated mediation was used to examine the significance of the moderated mediation coefficient.

In order to reduce the multicollinearity of the items, the independent variable (T1 perceived stress) and the mediator (T2 academic coping) were mean centered using the PROCESS macro (Hayes, 2017). The results of the moderated mediation analysis can be found in Tables 12 and 13. Table 12 shows the conditional indirect effects of X on Y at different values of the moderator (mean and 1 standard deviation above and below the mean) for the different moderated mediation analyses.

In a significant moderated mediation analysis, one would expect the conditional indirect effects of X on Y to change at different levels of the moderator. However, as can be seen in Table 12, the conditional indirect effect of X on Y in this analysis remained non-significant across different levels of the moderator (mean and plus and minus 1 standard deviation; signifying that moderated mediation is not present) for all of the analyses. The non-significance of the moderated mediation is further shown in Table 13 by the non-significant index of moderated mediation for all of the analyses.

Table 12

Conditional Indirect Effect(s) of X on Y at Values of the Moderator

IV	Mediator	DV	PSS1 Score	Effect	Boot SE	BootLLCI	BootULCI
PSS1	Cop2	TOSREC	-.67	.53	.74	-.75	2.27
PSS1	Cop2	TOSREC	.00	.08	.43	-.74	1.03
PSS1	Cop2	TOSREC	.67	-.36	.44	-1.57	.25
PSS1	Cop2	Eng3	-.66	-.02	.03	-.09	.02
PSS1	Cop2	Eng3	.00	-.02	.02	-.08	.02
PSS1	Cop2	Eng3	.66	-.01	.02	-.08	.01
PSS1	Cop2	Tenga3	-.66	-.02	.02	-.07	.01
PSS1	Cop2	Tenga3	.00	-.01	.02	-.05	.02
PSS1	Cop2	Tenga3	.66	.00	.02	-.05	.04

Note. PSS1= Perceived Stress T1. Cop2 = Academic Coping time 2. Eng3 = Student-Reported Emotional Engagement T3. Tenga3 = Teacher-Reported Emotional Engagement T3. Controlling for Variables: T1 Academic outcome, Age, and Gender.

Table 13

Index of Moderated Mediation

IV	Mediator	DV	Index	SE(Boot)	BootLLCI	BootULCI
PSS1	Cop2	TOSREC	-.67	.65	-2.27	.36
PSS1	Cop2	Eng3	.01	.01	-.01	.06
PSS1	Cop2	Tenga3	.01	.02	-.02	.06

Note. IV (pss1) = Perceived Stress T1. Mediator (cop2) = Academic Coping T2. DV (Eng3) = Emotional Engagement T3. (Tenga3) = Teacher-Reported Emotional Engagement T3. Moderator = Perceived Stress T1. Controlling for Variables: T1 Academic Outcome, Age, and Gender.

Chapter 5: Discussion

The overall goal of this study was to examine the relationships among students' perceived stress, academic coping, and academic outcomes in school. This study tested whether the perceived stress of elementary school DLL students affected the academic achievement of the students and whether problem-solving academic coping strategies explained how perceived stress affected the academic achievement of the DLL students. The study also analyzed whether the academic coping strategies were more highly associated with increased academic achievement in students with lower levels of perceived stress than higher levels of perceived stress. Ultimately, school professionals could potentially use the information from this dissertation to emphasize the use of beneficial academic coping strategies that improve academic achievement and become more culturally sensitive by promoting useful and appropriate academic coping strategies for DLL students.

Conducting this study with a low SES DLL sample was especially important as this population is especially at risk for struggling academically and not graduating from high school (DePaoli, Balfanz, & Bridgeland, 2016). The development of the items in the adapted coping measure and the hypothesized relationships among the variables relied on the constructs of self-determination theory (Skinner, Pitzer, & Steele, 2013; Skinner & Wellborn, 1997) and the cognitive appraisal model (Lazarus & Folkman, 1984).

I had two primary hypotheses for the study. Hypothesis 1 stated that the T2 academic coping measure would have a positive correlation with T3 academic outcomes. The second hypothesis was the moderated mediation hypothesis stating that T2 problem solving academic coping would mediate the relationship between T1 perceived stress and

T3 academic outcomes. T1 perceived stress would moderate the strength of this mediation path.

To test these hypotheses, first, the psychometrics of a modified academic coping measure were examined with items based on a scale created by Skinner, Pitzer, & Steele (2013). Results revealed that the modified items loaded onto one factor. The measure had adequate reliability but weak predictive validity. Results from correlation and regression analyses indicated that after controlling for T1 academic outcomes, age, and gender, T2 perceived stress did not mediate the relationship between T1 perceived stress and T3 academic outcomes, and T1 perceived stress did not moderate the relationship between T2 academic coping and T3 academic outcomes in the context of mediation. The following discussion section will discuss how these academic coping psychometrics, mediation, moderation, and moderated mediation results compare to previous research and theory. Limitations and potential next steps for research on academic coping are also described.

Academic Coping Psychometrics

As there was little consensus in the literature regarding an appropriate academic coping measure to use, I modified items from an existing measure (Skinner, Pitzer, & Steele, 2013) and conducted an exploratory factor analysis to create a new measure of academic coping. The original items by Skinner, Pitzer, & Steele (2013) were developed based on the construct of self-determination theory. Research suggested that problem-solving academic coping strategies such as *strategizing* and *help-seeking* helped students improve their competence, relatedness, and autonomy in the classroom and re-engage

with the classwork (Skinner, Pitzer, & Steele 2013; Skinner & Wellborn, 1997) along with improving student academic achievement (MacCann, Fogarty, Zeidner, & Roberts, 2011; Struthers, Perry, & Menec, 2000).

Contrary to my expectations that the items would load onto *strategizing* and *help-seeking* factors, the items loaded onto one factor. This is surprising as previous research by Skinner, Pitzer, & Steele (2013) found that for primarily Caucasian third through sixth grade students *strategizing* and *help-seeking* strategies were separate coping factors.

However, it cannot be assumed that measures function the same across different demographic groups (Miller & Sheu, 2008). It may be that for DLL students there is more of an overlap between the *strategizing* and *help-seeking* constructs than for primarily Caucasian monolingual students, resulting in one factor for the items instead of two. This is not an unreasonable assertion as both *strategizing* and *help-seeking* constructs are types of problem-solving coping strategies. Additionally, the measures used in the two studies were substantially different and had different items, and therefore the wordings of the items may have contributed to the items loading differently with the two scales. Additionally, there may be different cultural methods for academic coping. More research with the academic coping measure on a wide range of participants will provide further clarity regarding the overlap in the *strategizing* and *help-seeking* constructs.

To test hypothesis 1 which indicated that T2 academic coping would be positively correlated to T3 academic outcomes, correlations were conducted between T2 academic coping and T3 academic achievement outcome variables. As previously mentioned,

research has found that for many students there is a positive correlation between problem-solving academic coping strategies and academic achievement (Arsenio & Loria, 2012; MacCann et al., 2011; MacCann, Lipnevich, Burrus, & Roberts, 2012; Schenke, Lam, Conley, & Karabenick, 2015; Swanson, Valiente, Lemery-Chalfant, & O'Brien, 2011; Ryan, Hicks, & Midgely, 1997) and between problem-solving coping strategies and emotional engagement in school (Skinner & Wellborn, 1997; Reschly, Huebner, Appleton, & Antaramian, 2008). Hypothesis 1 was partially supported.

As predicted, the academic coping factor was positively related to T3 student-reported emotional engagement. However, contrary to expectations, it was not significantly correlated to T3 literacy achievement (as measured by the TOSREC) or T3 teacher-reported emotional engagement. However, follow-up analyses revealed that for males and students in third-grade, there were significant correlations between T2 academic coping and T3 teacher-reported engagement.

Since T2 academic coping was correlated with T3 student-reported engagement, in school, academic coping behaviors such as asking questions in class and planning out steps to solve school problems may be related to a student feeling more engaged in the classroom. This result is not surprising as Skinner & Wellborn (1997) found that asking questions in class and planning out steps helps students re-engage in the material and stay enthusiastic while learning. As discussed later, more research needs to be conducted on the effects that gender and age have on coping strategies and academic outcomes as it is unclear why there would be a correlation between T2 academic coping and T3 teacher-reported engagement for males and third grade students but not for females and fourth and fifth grade students.

However, problem-solving academic coping strategies do not appear to have a significant effect on the literacy of students. A potential reason why the problem-solving coping strategies were not associated with literacy achievement in this study but were correlated with academic outcomes in other studies is that different dependent variables were used. Many studies use grade point average (GPA) as a dependent variable (i.e., Arsenio & Loria, 2014; Basáñez, Warren, Crano, & Unger, 2014; Gonzalez, Tein, Sandler, & Friedman, 2001, and this study used a test of literacy achievement. A student's academic grade (especially in elementary school) may be influenced by academic behaviors such as participation and homework. It may be that problem-solving academic coping strategies, like participation, affect academic behaviors related to grades as opposed to scores on a literacy achievement test.

Moderated Mediation Hypothesis

Mediation and moderated mediation analyses were used to test Hypothesis 2. Hypothesis 2 states that T2 problem-solving academic coping mediates the relationship between T1 perceived stress and T3 academic outcomes and that T1 perceived stress moderates the strength of the mediation path between T2 academic coping and T3 academic outcomes. Both the mediation and moderated mediation models were not supported by this study when controlling for T1 academic outcomes, age, and gender. However, when not controlling for T1 academic outcomes, age, and gender, the indirect effect of T2 academic coping mediating the relationship between T1 perceived stress and T3 student-reported emotional engagement was significant. This study did not have enough power to look at differences in the mediation or moderated mediation models by gender or grade.

As the hypothesized mediation model was non-significant, this suggests that academic problem-solving was not the primary path through which T1 perceived stress affects T3 academic outcomes. Additionally, the moderated mediation model was also non-significant. T1 perceived stress did not act as a moderator in this model suggesting that the effect of academic coping on academic outcomes was similar among subjects with different amounts of perceived stress.

Mediation. As previously discussed, this study did not support the hypothesized mediation model when controlling for the T1 outcome variables, age, and gender. T2 problem-solving academic coping strategies did not act as a mediator between T1 perceived stress and T3 academic outcomes (when controlling for T1 academic outcomes, age, and gender). The indirect effects for the various mediation models were non-significant. This finding is surprising as the previously described research provided support for the different paths of the mediational model (Albeg & Castro-Olivo, 2014; Arsenio & Loria, 2012; MacCann, Lipnevich, Burrus, & Roberts, 2012). Past research has also found that coping strategies mediated the relationship between several relevant independent variables and academic outcomes such as: negative emotions and grades (Arsenio & Loria, 2014), personality traits and academic outcomes (MacCann et al., 2012), perceived stress and motivation to succeed academically (which was associated with increased grades; Struthers, Perry, & Menec, 2000), and emotions and emotional engagement (Reschly et al., 2008).

However, as previously noted, when not controlling for T1 student-reported emotional engagement, the indirect effect for T2 academic coping mediating the relationship between T1 perceived stress and T3 student-reported emotional engagement

is significant. This result suggests that when not accounting for T1 student-reported engagement, the relationship between T1 perceived stress and T3 student-reported can be explained by T2 academic coping. As previously mentioned, this result is supported by theory—both the cognitive appraisal theory and self-determination theory. To further analyze the mediation models, the different model paths merit discussion, which I subsequently address.

Path A. After controlling for T1 academic outcomes, age, and gender, path A was significant in two of the mediation models (models with DVs of T3 TOSREC and T3 teacher-reported emotional engagement). In the mediation model with a DV of student-reported emotional engagement, T1 student-reported emotional engagement accounted for most of the variance in path A, and path A was non-significant. This suggests that in this study T1 perceived stress was negatively associated with T2 academic problem-solving coping strategies in two of the models tested.

This finding that perceived stress is negatively correlated with problem-solving academic coping strategies is often found in the literature (Belizaire & Fuertes, 2011; Crego, Carillo-Diaz, Armfield, & Romero, 2016; MacCann, Lipnevich, Burrus, & Roberts, 2012; Tolan et al., 1997) and is supported by Lazarus in his studies on the cognitive appraisal model (1993). People tend to use less problem-solving coping strategies if they perceive their stressors as being out of their control.

Path B. As previously described, the relationship between T2 academic coping and T3 academic outcomes had mixed results. There was a positive association between T2 academic problem-solving coping and T3 student-reported emotional engagement. This suggests that there is a relationship between the academic problem solving coping

strategies of students in this sample and student's perception of their school engagement. However, the relationships between T2 academic coping and the other outcome variables were non-significant. As discussed later in the limitations section, part of the reason for the non-significant relationships may be due to this study lacking power to detect small effects. Additionally, controlling for T1 academic outcomes made it difficult to find significant results as the T1 academic outcomes accounted for large amounts of the variance in the T3 academic outcome variables, perhaps because T1 and T3 were so close in time.

Path C. Path C analyzes the relationship between the independent variable (T1 perceived stress) and the dependent variable (T3 academic outcomes). There was a significant correlation between T1 perceived stress and T3 TOSREC, student-reported engagement, and teacher-reported engagement without controlling for any variables. However, these relationships became non-significant in two of the models (DVs of T3 TOSREC and student-reported emotional engagement) after controlling for T1 academic outcomes, age, and gender. The non-significant correlations are surprising as many studies have found that perceived stress negatively relates to a variety of outcomes, including academic achievement (Albeg & Castro-Olivo, 2014; Alva & Reyes, 1999; Goodman, Miller, & West-Olatunji, 2012; Herbers, Cutuli, Supkoff, Heistad, Hinz, & Masten, 2012; Ma, 2000; McDonald, Joos, & Wadsworth, 2015; Saltzman, Pynoos, Layne, Steinberg, & Aisenberg, 2001; Schwartz, Lansford, Dodge, Pettit, G. & Bates, 2013; Thompson & Massat, 2005; White, 1982).

As expected, T1 perceived stress had a negative effect on T3 teacher-reported emotional engagement. Maslow's hierarchy of needs indicates that an individual needs to

address issues associated with his/her safety and well-being before addressing higher order needs such as belonging (Maslow, 1943). Therefore, if a person has much perceived stress resulting from many stressors in his/her life affecting physiological needs or safety, such as neighborhood violence or poverty, then those stressors will likely need to be addressed before the individual can put effort into engaging in the work at school.

The students in this sample face multiple stressors. Gang members are present in the community, and many of the families have recently immigrated to the United States. The school administration reported to the research team that several of the parents are likely undocumented and living in poverty; 95% of students receive FARMS. Past research has shown that gang presence in the community, low-socioeconomic status, and undocumented status can increase perceived stress (Cervantes & Cordova, 2011; Edwards, Adams, Waldo, Hadfield, & Biegel, 2014; Sullivan & Rehm, 2005). It is important to note that this study measured the perceived stress of the students, and not a list of stressors, as some students perceive different environmental conditions as being more stressful than others. However, it is likely that several of the students in this sample feel perceived stress associated with their safety or well-being. It was therefore not surprising that teachers perceive the students as not being engaged in the school as the students are likely distracted by the stress in their lives and have limited opportunity to engage in the school community effectively.

Moderated Mediation. In addition to the mediation models not being significant when controlling for the T1 outcome variables, age, and gender, the relationships among T1 perceived stress, T2 academic coping, and T3 academic outcomes did not follow the

hypothesized moderated mediation model as described in Figure 3. Moderated mediation occurs when “the strength of an indirect effect depends on the level of some variable, or in other words, when mediation relations are contingent on the level of the moderator” (Preacher, Rucker, & Hayes, 2007, p. 193). In this study, the indirect effects for the mediation models remained non-significant across the levels of the moderator.

Research on the cognitive appraisal method suggested that often problem-solving coping strategies are more effective at improving outcomes under conditions when a person perceives the situation as being more modifiable (Blaxton, & Bergeman, 2017; Lazarus & Folkman, 1984). I had hypothesized that the indirect effect of T2 academic coping mediating the relationship between T1 perceived stress and T3 would be stronger under conditions of less stress. However, the indirect effects of the mediation models remained non-significant across the levels of the moderator. As discussed further in the limitations and future directions sections, future research may want to examine other mediational paths between perceived stress and academic outcomes and use a more nuanced moderator that looks more specifically at student appraisals of stressors at school.

Path D. Path D is the moderation path of the model analyzing whether T1 perceived stress moderated the mediation path B within the context of the mediation model. Path D tests if problem-solving coping strategies have a stronger relationship with academic outcomes for students with lower levels of perceived stress than higher levels. This dissertation did not support moderation. In this study, problem-solving academic coping strategies were equally effective (or non-effective) at altering the

academic outcomes of the students for students experiencing high levels of perceived stress and lower levels of perceived stress.

This result is surprising as research on coping by Compas, Banez, Malcarne, & Worsham (1991) and Lazarus (1993) suggests that people are often better able to overcome their stressors using problem-solving coping strategies if the stressors are viewed as modifiable (i.e., lower perceived stress levels). Studies have found that if people use problem-solving strategies consistently during situations that are not easily changed, this can cause psychological distress (Lazarus, 1993).

It may be that in this study the primary stressors experienced by the students are in the community and not primarily with their school work. Therefore, even if the students scored high on the perceived stress scale (which asked about stress in the community and school), they may have still viewed their school difficulties as modifiable—and therefore amenable to change via problem-solving academic coping strategies. Therefore, the perceived stress variable in this study may not have adequately addressed how students perceive the modifiability of their stressors at school. As discussed further in the limitations section, a cognitive appraisal variable targeted at how students appraise school stress may have been a stronger moderator in this study.

Limitations

There were several limitations with this study that may have affected the analyses and outcomes. One of the greatest limitations involving the design of this study was that the short-term nature of the study limited the ability to make meaningful longitudinal inferences. The short-term nature of the study may have increased the ability of the T1 achievement items to explain the majority of variance in T3 achievement. Therefore,

when I did analyses while controlling for the T1 academic variables, there was a greater likelihood that the result would be non-significant.

Another limitation of the study was that the items on the scales may not have measured important aspects of the constructs that affected the results. For example, as previously mentioned, the modified perceived stress scale measured student's perceived stress across multiple contexts, like home and school. In retrospect, a more nuanced measure looking at how modifiable students appraise certain school stressors may have been a stronger moderator variable for this study.

Additionally, although the multiple item rating scales in this study were shown to have adequate reliability with this sample, it is unclear how scores on the scales would translate to tangible feelings and behaviors in the real world (Hobart, Cano, Zajicek, & Thompson, 2007). For example, if a student responded that they had an average score of 3 on the modified perceived stress scale, what does that mean in their life? One student may perceive a 3 on the scale to have a different meaning in their life than a different student may perceive the 3 on the scale.

There are other factors that could have affected the validity of the questionnaires and that could have affected the students' responses (Duckworth & Yeager, 2015). Students may have misinterpreted a question. Some of the items may have been poorly written or could have been interpreted in multiple ways. Additionally, the stress and academic coping questionnaires may have been too wordy and not written at a developmental level for the students. Many of the students in the sample were DLL students, and although questionnaires were read out loud individually to each student,

bilingual copies of the questionnaire were available, and research team members answered questions about the items, there could have been misunderstandings about the meanings of items. Since the items in the scale used in this study were substantially different than those used by Skinner, Pitzer, & Steele (2013), any differences in the results of this study compared to the study by Skinner, Pitzer, & Steele (2013) could be attributed to differences in the wording of items between the original and new scale used in this study. Also, this sample may have differed from the sample in Skinner's study by having different cultural methods of academic coping.

Students could have also misremembered their behaviors. People often estimate how often an event occurred "by the ease with which instances or associations come to mind" (Tversky & Kahneman, 1973, p. 208). This is known as the availability heuristic (Schwartz, Bless, Strack, Klumpp, Rittenauer-Schatka, & Simons, 1991; Tversky & Kahneman, 1973). Therefore, students may have indicated that they performed a behavior frequently even if it only occurred once or twice but was quite memorable for the student. Therefore, the students' responses to the measure may have been flawed.

Another limitation of the study was the sample size. This study had a sample of 146 students, which although according to the power analysis was large enough to detect a medium effect size $f^2 = .15$, was not large enough to detect a small effect size. Therefore, there may have been a small effect among the variables that was not able to be detected due to not having enough participants. Furthermore, the sample size was less than ideal when creating a new or adapted measure. A general rule when creating a measure is that there should be at least a ratio of 10:1 of participants to items (Costello & Osborne, 2005). This was the case in this study as there were ten items at a maximum per

measure. However, subsequent research by Costello & Osborne (2005) found that only 60% of samples with 10:1 ratios produced correct factor structure solutions (i.e., the same as the population parameters). Whereas, 70% of samples with ratios of 20:1 produced the correct factor structure (consistent with the population parameters).

Additionally, although there was only a limited amount of missing data and the data appeared to be missing completely at random (MCAR), the use of the listwise deletion procedure could have altered the ability to find significant relationships. Even with MCAR data, listwise deletion results in a loss of power so that the probability of rejecting the null hypothesis (of no relationship) is reduced (Myers, 2011). Some researchers have found that even when using MCAR data, “the point estimate...is about a standard error farther away from the truth because of listwise deletion” (King et al., 1998, p. 6).

Additional limitations involved the creation of the modified academic coping measure. In hindsight, more consideration could have been given to the wording of items, especially the reverse-coded items. Several of the items described states of mind as opposed to coping strategies. Additionally, this study may have had more practical applications if the same items used by Skinner, Pitzer, & Steele (2013) were used in this study as differences in factor structure could be attributed to differences in the sample as opposed to differences in the wording of items.

Practical Applications and Future Directions

Even with the aforementioned limitations of the study, some tentative conclusions can be drawn. There is little consensus in the literature regarding an appropriate academic

coping measure to use. Many of the studies looking at academic coping did not provide reliability evidence for the measures in their samples (Arsenio & Loria, 2014; MacCann, Fogarty, Zeidner, & Roberts, 2011, MacCann, Lipnevich, Burrus, & Roberts, 2012; Steward, Jo, Murray, Fitzgerald, Neil, Fear, & Hill, 1998; Steward, Steward, Blair, Jo, & Hill, 2008). This dissertation provides some support for the use of this measure of problem-solving academic coping. The measure had adequate reliability within this sample and had strong test-retest reliability. The measure had varied predictive validity; it was associated with T3 student-reported emotional engagement but not T3 TOSREC or T3 teacher-reported emotional engagement. More research should be conducted with different samples to determine the predictive validity of the measure.

As this study provides some support that T2 academic coping mediates the relationship between T1 perceived stress and T3 student-reported engagement, when not controlling for T1 student-reported engagement, school staff may want to consider promoting help-seeking and strategizing behavior in the classroom. These behaviors have been associated with re-engaging in the curriculum and promoting school engagement. This study also demonstrates the need for school staff to be conscientious of cultural differences in student behavior, such as asking questions in class, and to understand that asking questions in class may be more acceptable for some students than for others (Cabrera, Rashwan-Soto, & Valencia, 2016; Chu, & Walters, 2013; Kormi-Nouri, MacDonald, Farahani, Trost, & Shokri, 2015).

Although in this study there appears to be little support that perceived stress is correlated with academic outcomes (i.e., TOSREC and student-reported emotional engagement) after controlling for demographic variables and T1 academic achievement

scores, previous research has indicated that perceived stress is typically associated with academic outcomes. Perceived stress may affect academic outcomes through paths other than academic coping in this sample. Further research should try to identify these potential mediation and moderation paths so that more specific interventions can be created to ultimately help the academic outcomes of DLL students.

This dissertation provided some support that the efficacy of academic coping strategies can vary by gender and age. A meta-analysis by Tamres, Janicki, & Helgeson (2002) found coping differences for males and females. Females tended to use more coping strategies and verbalizing strategies. However, more research needs to be conducted on how the efficacy of academic coping strategies may vary by gender. Studies have found age differences in help-seeking behaviors in class (Newman, 2000; Shell & Eisenberg, 1992); however, further research with large diverse samples across grades could provide more information about how help-seeking behavior may vary by grade and to whom students approach in different grades for support.

Future studies should be conducted that also try to minimize some of the limitations found in this study. Future studies may want to use both quantitative and qualitative information to gather data. Researchers may be able to gain a better understanding of how academic coping relates to academic achievement if students are able to explain why they do or do not plan out steps to solve their problems and ask questions in class. Qualitative data may also provide more information about how students perceive individual stressors and how coping strategies and academic achievement are associated with these perceptions.

Future researchers may also want to conduct longer-term studies to see the effects of perceived stress and problem-solving coping strategies over a greater period of time. It may be that the T1 academic outcomes of students at the beginning of the school year will have less of an effect on the academic achievement of students at the end of the school year than was found in this study and controlling for the T1 variable would not make the results negligible.

Conclusion

In conclusion, this study examined the relationships among perceived stress, problem-solving academic coping, and academic achievement using a moderated mediation model with a low SES DLL sample. The model provides support that perceived stress is negatively associated with problem-solving academic coping strategies. It also supports the notion that student-reported problem-solving academic coping strategies are associated with student-reported emotional engagement. However, the model does not provide evidence indicating that problem-solving academic coping strategies are positively related to the literacy achievement or the teacher-reported emotional engagement of students.

Additionally, the model in this dissertation does not provide support for the notion that T2 problem-solving academic coping mediates the relationship between T1 perceived stress and T3 academic outcomes. It does, however, suggest that academic coping mediates the impact of stress on academic engagement, without controlling for T1 academic engagement. The supposition that the effectiveness of academic coping strategies on improving academic achievement outcomes, within the context of a

mediation model, would vary due to levels of perceived stress was not supported by these results. Overall, this dissertation adds to the research on the relationships among perceived stress, academic coping, and academic achievement for DLL students and provides some insight into potential next steps for study.

Appendix A

Table 1

Coping Items

Modified Coping Items Potential Strategizing Factor	Skinner Pitzer, & Steele (2013) Items Strategizing Factor
<p>You plan out steps to solve your problems in school.</p> <p>You ignore the problems you have at school. I</p> <p>If you are confused, you will try out different ways to solve your problems at school.</p> <p>It is very hard for you to solve problems with your school work.</p> <p>If you are mad at school, you do things to calm yourself down.</p>	<p>I try to figure out what I did wrong so that it won't happen again.</p> <p>I try to see what I did wrong.</p> <p>I think about some way to keep this from happening again.</p> <p>I try to figure out how to do better next time.</p> <p>I think of some things that will help me next time.</p>
Potential Help-Seeking Factor	Help-Seeking Factor
<p>When you CANNOT figure out a problem, you will go ask the teacher for help.</p> <p>When you do <u>NOT</u> know the answer to a question in school, you will ask a classmate for help.</p> <p>When you are confused at school, you are too nervous to ask the teacher for help. I</p> <p>You do <u>NOT</u> know how to solve your problems at school.</p> <p>You ask a lot of questions in class if you are confused.</p>	<p>I ask for some help with understanding the material.</p> <p>I get some help to understand the material better.</p> <p>I ask the teacher to go over it with me.</p> <p>I ask the teacher to explain what I didn't understand</p> <p>I get some help on the parts I didn't understand</p>

Note. The scale for the Modified coping items is as follows: 1) Not at all, 2) A Little, 3) Somewhat, 4) Mostly, 5) Very Much

Appendix B

Adapted Perceived Stress Scale

In the last week...

Think about a time when something unexpected happened.

- 1. How often did you get upset because something you did NOT expect happened?**

Never.	Almost never.	Sometimes.	Somewhat Often.	Very Often.
1	2	3	4	5

Think of a time when you did NOT like something that was happening.

- 2. How often did you feel like you could NOT do anything to change the way things were going?**

Never.	Almost never.	Sometimes.	Somewhat Often.	Very Often.
1	2	3	4	5

- 3. How often did you feel nervous and “stressed”? [*in general when you’re in school*]**

Never.	Almost never.	Sometimes.	Somewhat Often.	Very Often.
1	2	3	4	5

Think about a problem you have had.

- 4. How often did you feel like you could make your problems better?**

Never.	Almost never.	Sometimes.	Somewhat Often.	Very Often.
1	2	3	4	5

- 5. How often did you feel like things were going right for you?**

Never.	Almost never.	Sometimes.	Somewhat Often.	Very Often.
1	2	3	4	5

- 6. How often were you too upset to do all the things you had to do?**

Never.	Almost never.	Sometimes.	Somewhat Often.	Very Often.
1	2	3	4	5

Think about a time when you were frustrated.

- 7. How often did you feel like you could deal with things that frustrated you? [*or do something to feel better or fix the frustrating problem?*]**

Never.	Almost never.	Sometimes.	Somewhat Often.	Very Often.
1	2	3	4	5

8. How often did you think about your schoolwork and think, “I can do all of this!”?

Never. Almost never. Sometimes. Somewhat Often. Very Often.
1 2 3 4 5

9. Think about a time there were things you could NOT change. How often did you get mad about that?

Never. Almost never. Sometimes. Somewhat Often. Very Often.
1 2 3 4 5

10. How often did you feel like there were so many hard things to do that you just could NOT do them all?

Never. Almost never. Sometimes. Somewhat Often. Very Often.
1 2 3 4 5

Appendix C

Table 2

List of Academic Coping Studies

Authors	Year	Sample	Coping Measure/Reliability	Summary
Arsenio & Loria	2014	119 ninth through twelfth grade students, suburban sample, families rank in the top 2% of income	Adapted Responses to Stress Questionnaire (RSQ; Compas et al., 2001) Validity and reliability not reported for sample	Disengaged coping correlated with lower GPA's
<u>Basáñez, Warren, Crano, & Unger</u>	2014	<u>2,214 Hispanic adolescents in tenth and eleventh grade</u>	Adolescent Version of the Kidcope Checklist (Spirito et al., 1988) Reliability: Avoidant coping: $\alpha = .62$ Active coping: $\alpha = .62$	Positive correlation between active coping strategies and grades. No significant relationship between avoidant coping strategies and grades.
Crean	2004	304 inner city Latino 6 th and 7 th grade students	Coping Response Inventory-Youth Form (Moos, 1990) Reliability: Across the four subscales, internal consistencies ranged from .64 to .68 and from .62 to .73 for the Spanish versions	Negative relationship between approach coping and academic performance (measured by a combination of GPA, conduct, and peer ratings of sociability)
Gonzalez, Tein, Sandler, & Friedman	2001	445 7 th and 8 th grade inner city students	Children's Coping Strategies Checklist (Ayers et al., 1996)	In the sample with high stress levels, active coping

			<p>CFA goodness of fit: ($\chi^2 = 69.88$, $df = 29$, $CFI = .98$)</p> <p>Reliability:</p> <p>α was .90 for active coping, .70 for avoidance, .68 for distraction, and .85 for support seeking</p>	<p>(<i>problem-solving</i> coping) was negatively correlated with grade point average. Avoidant coping had no significant relationship with GPA.</p>
MacCann, Fogarty, Zeidner, & Roberts	2011	293 eighth grade students	<p>Coping with School Situations-Youth Form (MacCann et al., 2009)</p> <p>Reliability and validity not reported for this sample</p>	<p>Researchers found a positive relationship between problem-focused coping strategies and GPA. They found a negative relationship between Emotion-focused coping and Avoidant-Focused coping and GPA.</p>
MacCann, Lipnevich, Burrus, & Roberts	2012	354 high school students	<p>Coping with School Situations Questionnaire (CWSS; MacCann et al., 2009)</p> <p>Reliability and validity not reported</p>	<p><i>Problem-focused</i> coping positively affected students' grades, life satisfaction, and positive feelings about school above and beyond control variables such as sex and parent age, scores on a vocabulary test,</p>

				and personality type
Ryan, Hicks, & Midgely	1997	443 fifth graders	Avoidance of Help Seeking Questionnaire from items created by Arbretron (1993) and Ryan and Pintrich (1997) Reliability: (six items $\alpha = .75$)	Researchers found a negative relationship between grade point average and avoidance of help-seeking in class. In the study, the researchers indicated that avoidance of help seeking happens during instances when “a student needs help but does not seek it” (p.159).
Schenke, Lam, Conley, & Karabenick	2015	3897 students grades 7–11 in 306 classrooms	Adapted help-seeking questionnaire from (Karabenick 2004)	Positive correlation between help seeking behaviors in students and standardized achievement in math
Struthers, Perry, Menec	2000	203 college students (races and genders not published)	Student Coping Instrument (SCOPE; modified version of Carver et al.’s (1989) dispositional COPE scale) Reliability: Overall $\alpha = .80$, PFC $\alpha = .80$, EFC $\alpha = .70$	Student’s use of problem-solving coping strategies was positively associated with increased motivation and grade in introductory psychology class
Suldo, Shaunessy, & Hardesty	2008	322 high school students (139 in the International	Adolescent Coping Orientation for Problem	Students in the IB program experience

		Baccalaureate program)	Experiences (ACOPE; Patterson & McCubbin, 1987) Reliability: “Cronbach’s alpha for each variable indicated questionable to acceptable internal consistency (0.76, 0.73, 0.69, and 0.69, respectively).”	more stress than other students. With the IB students, no relationship between avoidance coping strategies and GPA.
Swanson, Valiente, Lemery-Chalfant, & O’Brien	2011	240 students in grades 3-6 (55% were Mexican American)	Responses to Stress Questionnaire (RSQ; Compas et al., 2001) Reliability: ($\alpha = .78$)	There was a positive relationship between engagement <i>problem-solving</i> coping strategies and academic achievement (measured by peer and teacher-reported grades).

Appendix D

Table 4

Factor Matrix for Perceived Stress Scale

Item	Loading
1. How often did you get upset because something you did NOT expect happened?	.42
2. How often did you feel that you could NOT do anything to change the way things were going?	.33
3. How often did you feel nervous and “stressed”?	.62
4. Reverse-scored PSS56	.41
5. How often were you upset by all the things you had to do?	.58
6. Reverse-scored PSS59	.36
7. Think about a time there were things you could NOT change. How often did you get mad about that?	.34
8. How often did you feel like that there were so many hard things to do that you just could NOT do them all?	.51

Note. Extraction Method Principal Axis Factoring. Items PSS58R and PSS55R dropped.

Appendix E

Table 5

Factor Matrix for Academic Coping Factor

Item	Loading
1. When you CANNOT figure out a problem, you will go ask the teacher for help.	.49
2. When you do NOT know the answer to a question in school, you will ask a classmate for help.	.46
3. You plan out steps to solve your problems in school.	.50
4. If you are confused, you will try out different ways to solve the problem at school.	.36
5. You ask a lot of questions in class if you are confused.	.47
6. If you are mad at school, you do things to calm yourself down.	.40
7. During class, I ask questions.	.65
8. When I'm in class, I participate in class discussions.	.60

Note. Extraction Method Principal Axis Factoring. Items Cope44R, Cope46R, Cope47R, and Cope49R dropped.

Appendix F

Five item Self Report Engagement vs. Disaffection with Learning Scale**1. When I'm in class, I feel good.**

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

2. When we work on something in class, I feel interested.

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

3. Class is fun.

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

4. I enjoy learning new things in class.

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

5. When we work on something in class, I get involved.

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

Appendix G

Five Item Teacher-Reported Emotional Engagement Scale**1. In my class, this student is enthusiastic.**

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

2. In class, this student appears happy.

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

3. When we start something new in class, the student is interested.

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

4. When working on classwork, this student seems to enjoy it.

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

5. For this student, learning seems to be fun.

Not at all. A little. Somewhat. Mostly. Very much.
1 2 3 4 5

Appendix H

Factor Matrix for T3 Student-reported Emotional Engagement

Item	Loading
1. When I'm in class, I feel good.	.64
2. When we work on something in class, I feel interested.	.73
3. Class is fun.	.64
4. I enjoy learning new things in class.	.73
5. When we work on something in class, I get involved	.52

Note. Extraction Method Principal Axis Factoring.

Factor Matrix for T3 Teacher-Reported Emotional Engagement

Item	Loading
1. In my class, this student is enthusiastic.	.82
2. In class, this student appears happy.	.80
3. When we start something new in class, the student is interested	.87
4. When working on classwork, this student seems to enjoy it.	.90
5. For this student, learning seems to be fun	.95

Note. Extraction Method Principal Axis Factoring.

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