THE IMPACT OF MATERNAL PARENTING STYLES ON GOAL ORIENTATIONS,

SELF-EFFICACY, AND USE OF METACOGNITIVE STRATEGIES FOR

MATHEMATICS AMONG HISPANIC HIGH SCHOOL STUDENTS

A Dissertation Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Doctor of Philosophy

by

Hibah Salem

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Approved by Dissertation Committee:

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Dr. Shirley L. Yu, Chairperson

_____

Dr. Weihua Fan, Committee Member

_____

Dr. Christopher A. Wolters, Committee Member

_____

Dr. Catherine Horn, Committee Member

_____

Dr. M. Nicole Coleman, Committee Member

_____

Dr. Robert H. McPherson, Dean
College of Education

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Abstract

Research has revealed that a significant achievement gap is present between Hispanic and White students (Aud & Hammes, 2011). The extant literature on the math achievement of Hispanic students has attempted to explain the factors responsible for this underachievement including the influence parents have on the academic achievement of their children. The purpose of this study was to examine how three types of maternal parenting styles were related to Hispanic high school students' math performance. Additionally, the study examined the mediating effects of goal orientations, self-efficacy, and use of metacognitive strategies on the relationship of maternal parenting styles and students' math performance.

The sample was comprised of Hispanic high school students ($N = 312$) who were enrolled in either Algebra I, Geometry, or Algebra II. Associations between maternal parenting styles, goal orientations, self-efficacy, use of metacognitive strategies, and math performance were quantified using mediation analyses based on the principles of Baron and Kenny's (1986) causal steps approach.

Results of the multiple regression analyses indicated that all three parenting styles predicted students' math performance with permissive having a negative effect on math scores. Authoritarian positively predicted both mastery-avoidance and performance-approach goal orientations. Authoritative positively predicted mastery-approach, while permissive positively predicted performance-avoidance and negatively predicted

mastery-avoidance. Both authoritative and permissive styles positively predicted self-efficacy and metacognitive strategies.

Results also confirmed the performance-approach orientation as a mediator between the authoritarian parenting style and math performance. The relationship between the authoritative parenting style and math performance was mediated by the mastery-approach goal orientation. Mediation effects were confirmed with post-hoc Sobel tests. Limitations and practical implications for these findings were discussed.

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Chapter I

Introduction

One of the greatest areas of concern for educators and parents alike is the academic achievement of students and the influences on their academic outcomes. Studying this can be an arduous task to accomplish due to the multitude of factors that may affect students' desire to learn and the many differences students bring into the classroom and the school environment. Student learning is often a complex interplay of many different factors such as individual characteristics (e.g. gender, maturity, and ability) and family background, as well as the dynamics within the classroom.

At a broad level, researchers studying students from various academic levels have linked numerous variables such as the classroom environment, students' well-being, and peer relations with students' achievement outcomes (Coleman, 1990; Fall & Roberts, 2012; Gonzales, Cauce, Friedman, & Mason, 1996; McBride-Chang & Chang, 1998; Mullis, Rathge, & Mullis, 2003; Steinberg, Lamborn, Dornbusch, & Darling, 1992b; Whaley & Noel, 2012). Additionally, other research has explored associations between academic achievement and individual predictor variables such as academic motivation, goal orientations, and self-efficacy (Bandura, 1997; Dweck & Leggett, 1988; Gottfried, Fleming, & Gottfried, 2001; Horyna & Bonds-Raacke, 2012; Schunk, 1991; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2012). Although the research literature provides compelling evidence for the factors that can be used to predict students' academic achievement at various academic levels, further research is needed on the factors that may be linked to achievement, specifically in Hispanic high school students, which will be the focus of the remainder of this chapter.

Hispanics are the fastest growing minority group in the United States, making up more than 53 million people of the nation's population (U.S. Census Bureau, 2012). In fact, 25% of the Pre-K – 12th grade public school population is Hispanic (PEW Research Center, 2012). Research on the math achievement of Hispanic students has revealed that a significant achievement gap is present between Hispanic and White students based on data from the U.S. Department of Education's National Center for Education Statistics (Aud & Hannes, 2011). Specifically, the center's report indicates that while math scores for both Hispanic and White students have increased since 1990, Hispanic students are still behind White students by the same amount today as they were in 1990. That is, the achievement gap between these two groups of students has been essentially unchanged for the past two decades.

Looking specifically at the extant literature on Hispanic students, researchers have attempted to identify the key factors responsible for this underachievement. First, one of the main areas of concern is the lack of qualified teachers to teach English language learners (ELL) (Menken & Holmes, 2000). Teachers are often challenged with teaching the traditional curriculum to students who are newly acquiring English as a second language. In 2012, 10% of all public school students qualified as ELL; however, less than 1% of public school teachers are certified English as a second language (ESL) instructors. This means that there is just one ESL teacher for every 150 ELL students. When compared to the standard classroom ratio in general education classrooms of one teacher for every 15 students, these figures are staggering and certainly warrant attention (Aud, Hussar, Johnson, Kena, & Roth, 2012).

Another crucial factor used to explain the underachievement of Hispanic students is the pedagogical approaches used to teach this group of students. A type of instruction often utilized by teachers in areas that serve a large number of Hispanic students is a teacher-directed model. In this approach, teachers typically teach the whole class at the same time and control classroom decision making and discussions (Padron & Waxman, 1993; Short & Echevarria, 2004). This type of approach generally involves lecture, drill practice, remediation, and seatwork consisting mainly of worksheets. Studies examining the classroom instruction of Hispanic students have termed this teaching approach as the "pedagogy of poverty" because it focuses on low-level skills and passive instruction (Haberman, 1991; Waxman, Huang, & Padron, 1995). In a large scale study examining the teaching practices of 90 teachers and their students, Waxman and colleagues found that teachers utilized whole-class instruction and allowed students little time for verbal interaction with the teacher or other students. Students were generally very passive and were rarely given the opportunity to select their own instructional activities (Waxman et al., 1995). Studies specifically looking at the teaching approaches used in Hispanic students' math classes found similar results with whole-class teaching methods being utilized over 50% of the time (Padron & Waxman, 1993).

The term "at risk school environments" has also been associated with the underachievement of Hispanic students. Several studies have found that Hispanic students attend poorly maintained schools which could be classified "at-risk" (e.g. Kominski, Jamieson, & Martinez, 2001). Many features of the school and the classroom alienate Hispanic students and consequently drive them out rather than keeping them engaged (Kagan, 1990). Some common characteristics of "at-risk" schools include

inferior standards and low quality of education, low expectations of students, high non-completion rates for students, classroom practices that are unresponsive to students' learning needs, high truancy and disciplinary problems, and inadequate preparation of students for the future (Dynarski et al., 2008).

Furthermore, some scholars have focused on such factors as the role of acculturation (e.g. Good, Masewicz, & Vogel, 2010) to explain the underachievement of Hispanic students. In a qualitative study of parents from a predominantly Hispanic rural school district, it was reported that some barriers between parents and teachers were related to the poor performance of Hispanic students. These barriers included communication gaps, cultural clashes, lack of teacher preparation in multiculturalism, and lack of support systems for families transitioning to a new environment (Good et al., 2010).

Past researchers have also examined the role of traditional cultural values and beliefs common to those who identify themselves as Hispanic such as valuing relationships and strong family values on academic achievement (Rodriguez, 1995; Ryan, Casas, Kelly-Vance, Ryalls, & Nero, 2010). Ryan and colleagues (2010) surveyed Hispanic and non-Hispanic families ($N = 104$) regarding the importance of their children's academic and social success. Findings revealed that Hispanic parents valued their children's academic and social success more than non-Hispanic parents. Hispanic families also reported greater involvement of other family members in their children's education. Furthermore, it was revealed that these differences were accounted for by the cultural beliefs (Ryan et al., 2010). Further research is needed on the additional

sociocultural factors that affect this large segment of the population such as the role

parenting practices have on the academic achievement of their children.

In the present study, the relationship between parenting styles and academic

performance will be explored in order to gain a deeper understanding of the predictors

that are associated with the math performance of Hispanic high school students. In

addition, students' goal orientations, self-efficacy, and the use of metacognitive strategies

for math will be examined in order to ascertain the relationships these variables have as

mediators between parenting styles and academic performance in Hispanic high school

students.

Chapter II

Literature Review

Conceptual Framework

To provide support for the rationale of linking parenting styles with students' academic performance, a social cognitive theoretical perspective will be used to guide the current study. A central assumption of social cognitive theory is the presence of a *triadic reciprocality*, or the belief that the personal, behavioral, and environmental factors influence one another in a bidirectional manner (Bandura, 1986). This assumption explains the person's ongoing functioning as a continuous interaction between cognitive, behavioral, and contextual factors. This relationship applies to the learning processes in that learning is shaped by factors such as the students' academic environment and their own thoughts and beliefs as well as their perception of the classroom context.

Similarly, social cognitive theory explains self-regulated learning using this reciprocal relationship. Self-regulation is a multi-dimensional construct which postulates that learning is a self-directed process by which the learner's abilities are transformed into task related skills (Zimmerman, 1990). This process involves a phase in which the learner sets goals and analyzes the task followed by the development of strategies, and finally the learner self-reflects based on feedback from themselves and those around them. As with the assumptions of social cognitive theory, the process of self-regulated learning involves the personal, behavioral, and environmental factors previously mentioned. Thus, the social cognitive model will be used to examine the mediating effects of self-efficacy and use of metacognitive strategies on the relationship between parenting styles and math performance.

Achievement goal theory will be used to provide a theoretical framework for investigating the differential influence of achievement goals on the relationship between parenting styles and math achievement (Pintrich, Conley, & Kempler, 2003). Each of these theories will be explained in greater detail in the next sections.

Parenting Styles and Academic Achievement

Parents play an integral role in the development of their children. Not only do parents help shape their social and emotional development, but they also help form their intellectual development. The type of parenting styles parents utilize has been linked to the academic achievement of their children (e.g. Hickman, Bartholomae & McKenry, 2000; Steinberg, et al., 1992b). In the following section, a review of parenting styles and relevant academic outcomes associated with each will be presented followed by a review of some findings related to parenting styles and adolescent students' achievement.

The psychological construct that describes the standards parents use to raise their children is known as *parenting style* (Baumrind, 1971). Baumrind's parenting styles typology has been fundamental to parenting research and is commonly cited in the research literature. Through classroom observations and parent interviews, Baumrind (1967) studied over 100 pre-school children at a university-based child care center. She identified that all types of parenting styles involve a degree of acceptance, responsiveness, demand, and control. These styles based on Baumrind's initial work in this area are: authoritarian, authoritative, and permissive.

The *authoritarian* parenting style is characterized by shaping and controlling the child's behavior with little or no verbal exchange and parents are often described as harsh, unresponsive, and rigid (Gauvain, Perez, & Beebe, 2013). The parent places a

strong emphasis on obedience and believes that the child should accept his or her word for what is right. This type of parenting style is associated with more negative outcomes in children such as anxiety and withdrawal as well as less support and encouragement for learning (Baumrind, 1971; Baumrind, Larzelere, & Owens, 2010). This style has also been correlated with poor social skills and higher rates of depression (Milevsky, Schlechter, Netter, & Keehn, 2007).

In support of these conjectures, research has revealed links between authoritarian parenting and obedience. Coplan and colleagues (2002) revealed that compared to authoritative mothers, authoritarian mothers focused primarily on instilling obedience and respect for authority when teaching their children how to socialize with their peers. In a sample of approximately 300 school-aged children, researchers revealed that those with authoritarian mothers were more likely to report negative emotions related to socialization such as anger and embarrassment (Coplan, Hastings, Lagace-Sequin, & Moulton, 2002).

Authoritative parenting also involves exerting control; however, the parent shares the reasoning behind the policies imposed. Parents encourage children to express their interests and ideas while also setting standards and expectations to shape the child's behavior. Additionally, the parent directs the child's activities in a rational, warm, issue-oriented manner (Steinberg et al., 1992b). More positive outcomes are often associated with this type of parenting style, such as a greater sense of self-confidence (Steinberg et al., 1992b), more developed emotional regulation (Baumrind, 1971), and autonomy (Gonzalez & Wolters, 2006) compared to those children raised by other types of parenting styles.

Gauvain and Perez (2005) conducted a longitudinal study which involved observations and self-report questionnaires of 149 mothers and their children for a period of three years. The results indicated that parental warmth was positively correlated with the child's participation in organized and informal learning activities. Furthermore, parental control was negatively correlated with children's participation in activities (Gauvain & Perez, 2005). These results are consistent with Baumrind's (1971) view that the authoritative parenting style fosters the development of autonomy and self-confidence.

The *permissive* parenting style is characterized by placing few demands on children. These types of parents are non-involved and dismissive, often retreating from confrontations. The parents have a very minimal role in shaping or altering the child's behavior (Steinberg et al., 1992b). Interestingly, children and adolescents whose parents use permissive styles tend to have higher self-confidence, but lack self-control (Park & Bauer, 2002). In addition, children with permissive parents often show low persistence to challenging tasks (Park & Bauer, 2002).

Consistent with Baumrind's findings regarding permissive parents' lack of commitment and dismissiveness, Patterson and Fisher (2002), found that parents perceived as permissive often react to coercive and unacceptable child behavior in a neutral manner and often give in to whatever the child requests. Specifically, based on responses gathered from self-report questionnaires given to adolescents ($N = 222$), researchers concluded that permissive parents indiscriminately agree and affirm with the adolescent because they do not want to directly confront the defiant child regarding behaviors that require change (Patterson & Fisher, 2002).

Further research has revealed a fourth type of parenting style known as *neglectful* (Maccoby & Martin, 1983). Parents utilizing this type of parenting style exhibit low warmth and low control. They are emotionally detached from their children and are generally uninvolved. Research on this population is lacking due to the unresponsive and uninvolved nature of these parents which makes gaining consent to study their children difficult (Dekovic & Gerris, 1992; Glasgow, Zimmerman, Troyer, Steinberg, & Ritter, 1997). Due to these reasons, the current research will only examine the first three types of parenting style previously mentioned: 1) authoritarian, 2) authoritative, and 3) permissive.

The remainder of this section will review the extant literature pertaining to the relations between parenting styles and students' academic achievement. With regards to the permissive parenting style, studies revealed that this type was generally related to low academic achievement (Cohen & Rice, 1997; Pittman & Chase-Lansdale, 2001; Roche, et al., 2007). In a study with a sample of 386 matched parent-child pairs, it was found that students who perceived their parents as less authoritative and more permissive reported low grades (Cohen & Rice, 1997). Similarly, utilizing a sample of adolescent girls paired with their female caregivers ($N = 302$), Pittman and Chase-Lansdale (2001) found that girls with mothers who were disengaged and permissive, were more likely to have lower grades than their peers.

Conversely, the authoritative parenting style has been consistently found to be positively correlated with academically related outcomes. Specifically, students with authoritative parents tend to exhibit higher grades and more positive academic outcomes (Cohen & Rice, 1997; Dehyadegary, Yaacob, Juhari & Talib, 2012; Paulson, 1994; Pong,

Johnston & Chen, 2010; Roche et al., 2007; Simons & Conger, 2007; Steinberg, et al.,

1992b). Gonzalez and Wolters (2006) also found positive outcomes related to this style

in a sample of high school math students ($N = 140$). It was revealed that students who

perceived their parents as authoritative reported feeling more autonomous and more

intrinsically motivated towards their Algebra classes.

  While a general consensus in the literature on parenting style is that authoritative

parenting styles are associated with more positive outcomes, some research has found

this to be true of the authoritarian parenting style. In a study utilizing secondary students

($N = 150$), it was found that perceived paternal authoritarianism positively predicted

academic performance (Mofid, Azadfallah, & Tabatabai, K., 2012). Conversely,

perceived maternal authoritarianism was related to an increase in mastery goal orientation

in a sample of 311 high school students (Gonzalez, Greenwood, & WenHsu, 2001).

  A greater amount of research has revealed that the authoritarian style is generally

associated with negative academic outcomes. For example, Williams, Ciarrochi, and

Heaven (2012) conducted a longitudinal study which investigated the relationship

between parenting style and children's ability to respond appropriately to environmental

demands or psychological flexibility. The researchers followed a group of 749 students

for six years starting in Grade 7. Based on data gathered on students' perceived parenting

styles and psychological flexibility, multi-level modeling revealed that the authoritarian

parenting style predicted low psychological flexibility and poor grades across the high

school years (Williams, et al., 2012).

  Additionally, in another study authoritarian parenting was found to be related to

adolescents' low academic achievement and higher levels of problems in school (Roche,

Ensminger, & Cherlin, 2007). Using data from over 800 African-American and Hispanic

10 to 14-year-olds, researchers found that adolescents who perceived their parents as

strict and punitive were more likely to display delinquent behavior such as skipping

school and cheating as well as experience more academically related problems at school.

This relationship was stronger for African-American males who perceived their

neighborhoods as dangerous and socially disorganized (Roche et al., 2007).

In order to address these contradictory findings and to further understand maternal

parenting style specifically for Hispanic students, further research in this area is essential.

Thus, the current study will focus on the predictive effects of maternal parenting styles on

students' academic achievement.

Ethnic group differences and parenting style. While some researchers contend

that the effects of parenting depend on the cultural context in which it occurs (Mandara,

2006), others argue that the effects of parenting are universal (Lamborn & Felbab, 2003).

An overview of the parenting literature on non-European American groups reveals that it

is not only inconsistent, but also very limited. Two of the major issues in the review of

the literature pertaining to differences between ethnic groups and parenting styles are the

focus of the first two parts of this section. To conclude, the last portion will focus solely

on Hispanic students and findings related to that population.

First, although there are some commonalities between the parenting style

typology reported most often for non-European Americans, several discrepancies still

exist. For example, in one study it was found that Asian-American students were more

likely to report an authoritarian parenting style and more positive academic outcomes

than Caucasian students in a sample of 548 adolescents (Ang & Goh, 2006). Other

studies have found that Asian-American adolescents are more likely to perceive their parents as authoritative, although this finding is less often reported (e.g. Pong, et al., 2010).

Another study found that African-American adolescents, between 11 and 14-years-old ($N = 94$), were more likely to perceive their mother's parenting style as authoritative and this was positively associated with engagement in classwork and persistence on tasks (Smalls, 2009). Yet other studies report that African-American parents tend to use an authoritarian parenting style (e.g. Querido, Warner, & Eyberg, 2002).

With Hispanic students, the research is also inconsistent regarding the type of parenting style that is most often reported. For example, some studies have reported that Hispanic parents tend to be overly directive and utilize an authoritarian style with their children (Cardona, Nicholson, & Fox, 2000; Steinberg, Dornbusch, & Brown, 1992a). Using self-reported data from Hispanic mothers ($N = 76$), researchers found that Hispanic mothers are more likely than Caucasian mothers to report a high frequency of discipline and low frequency of nurturing when dealing with their children ages 5-10-years-old (Cardona et al., 2000). In earlier work, Martinez (1988) found similar findings. In contrast, others researchers reported that Hispanic parents tend to use an approach consistent with that of the authoritative parenting style (Calzada & Eyberg, 2002; Raffaelli & Green, 2003). In a study of Hispanic mothers ($N = 130$), it was noted that they engage in high levels of praise and physical affection and low levels of harsh, inconsistent, and punitive parenting behaviors (Calzada & Eyeberg, 2002).

Second, in studying ethnic differences in parenting styles with regards to adolescents' academic outcomes, several contradictory findings related to the outcomes generally associated with particular ethnic groups have been noted in the literature. In one particular study of ethnically diverse college students, parenting style was found to be associated with differences in the Grade Point Average (GPA) of African-American students. Gonzales and colleagues (1996) studied African-American junior high students to determine the associations parenting style has on students' performance in college. Using a self-report measure, researchers asked students questions regarding their parents' parenting style and their GPA. Results revealed that students' ethnicity influenced not only the type of parenting style students perceived, but African-American students who perceived their parents as authoritarian reported higher GPAs (Gonzales, et al.,, 1996). In a study with Chinese-American students ($N = 100$), the authoritarian parenting style was also found to be associated with better academic achievement compared to students from other ethnic groups (Chao, 1994). The focus of the remainder of this section will be on the parenting styles of Hispanic parents and students' academic achievement.

Hispanic families are often characterized as collectivistic rather than individualistic. A strong emphasis is on family values and the well-being of the entire family rather than individual goals and aspirations (Sommers, Baskin, & Fagan, 1993). In Hispanic families, the traditional gender roles for mothers and fathers are often explicit. One the one hand, mothers are seen as experts in children's development and education, are often responsible for all child-rearing. Fathers, on the other hand, are the wage-earners and disciplinarians (Durand, 2010; Dusenbury, Epstein, Botvin, & Diaz, 1994). Since mothers play such a vital role in the children's development, the current

study will look specifically at the role of mothers' parenting styles in influencing Hispanic students' math achievement.

The relation of parenting styles and Hispanic adolescents' academic outcomes has been explored in the research literature. For example, it was found that Hispanic adolescents who reported having authoritarian parents were more likely to be highly engaged academically whereas those with non-Hispanic parents, this effect was not significant (Torres-Villa, 1995). Also, researchers have found that Hispanic adolescents of permissive parents scored higher on various self-esteem dimensions than did those from authoritative families (Martinez & Garcia, 2008; Martinez, Garcia, & Yubero, 2007; Villalobos, Cruz, & Sanchez, 2004). For example, in a sample of 1,239 Brazilian adolescents, it was found that those who were raised by parents who researchers categorized as indulgent or permissive, scored higher than those from authoritarian or neglectful families on four self-esteem dimensions: academic, social, family, and physical (Martinez et al., 2007).

Several studies have examined the link of specifically maternal parenting styles and Hispanic students' academic achievement (Guilamo-Ramos, et al., 1997; Mital, 2011). Mital (2011) revealed the importance of maternal authoritative parenting style in nurturing personal interest in school, both directly and indirectly through the endorsement of mastery goals during adolescence. Additionally, Elias and Yee (2009) found that students' perceived maternal parenting style was significantly related to students' academic achievement while paternal parenting styles were found to have no effect. Given these patterns, the present study will look solely at the maternal parenting style as it is likely to have the most influence on adolescents' academically related work.

The research literature on parenting styles has, without a doubt, advanced our understanding of children's social and academic development; however, some argue that the sample utilized in Baumrind's research was primarily well-functioning, two-parent middle class European-American families and cannot be applicable to other ethnic groups. Others present compelling evidence shows that the effects of parenting styles are in fact consistent across cultural groups (Sorkhabi, 2005; Steinberg, 2001). Additionally, previous research has used the *cultural equivalence model* to argue that parenting practices, namely, reasonable behavioral control, provisions of emotional support and warmth, and psychological autonomy are important to all adolescents regardless of their background as these address universal needs (Lamborn & Felbab, 2003). Four general arguments support the assertions of the cultural equivalence perspective. First, parents in all cultures share similar values and socialization goals for their children. Second, the same parenting style has the same effects on youths in different cultures. Additionally, children in different cultures interpret the same parenting style in the same way. Finally, the emotional and cognitive characteristics of the various styles across different cultures are the same (Sorkabi & Mandara, 2013).

In support of this contention, large scale parenting styles studies by Steinberg and colleagues (1994; 2001) found that authoritative parenting was related to optimal mental health and the least amount of behavioral problems for youth from all ethnic groups including Hispanics. Additionally, in another study using a large national sample of African-American adolescents, similar results were found (Taylor, Hinton, & Wilson, 1995). Relatedly, in a study on African-American mothers who were perceived as authoritarian, their children's' GPA was negatively correlated with parenting style

(Attaway & Hafer-Bry, 2004). Although variations in findings exist, there is a vast amount of evidence which suggests that Baumrind's model is applicable to all youth regardless of their cultural background.

With the exception of a few studies, little has been done looking at the parenting styles of Hispanic mothers and the relationship to students' math performance. The current study addresses this significant gap in the literature by examining the relationship of maternal parenting styles and academic performance of Hispanic high school students while taking into account the mediator variables of goal orientations, self-efficacy, and metacognitive strategies which will be addressed in the next sections.

Self-Regulated Learning and Academic Achievement

Self-regulated learning refers to an integrated learning process consisting of students' self-generated thoughts and behaviors that are oriented systematically toward the attainment of their goals (Zimmerman, 2001; Zimmerman & Schunk, 2011). Learning is an active process rather than something that just passively happens to the learner as a reaction to teaching. From a social cognitive perspective, self-regulated learning is the interaction among the person, his or her behavior, and the environment. There are four general assumptions that most models of self-regulated learning share and a three phase cyclical process which social learning psychologists believe learners go through in becoming self-regulated learners. These assumptions and the process of self-regulated learning will be the focus of the reminder of this section.

The first common assumption is that learners are active participants in the learning process and they actively control the resources they have available to them such as the setting, use of peers, or time, and demonstrate the self-regulation of their behavior

(Garcia & Pintrich, 1994; Pintrich, 2004). Students are not passively influenced by their situational conditions, rather they have a sense of personal agency when it comes to their learning experiences (Bandura, 1986). Learners construct their own meanings, goals, and strategies from the information they have available in their own minds (internal environment) as well as information in their external environment (Pintrich, 2004).

Relatedly, another fundamental assumption of self-regulated learning is that learners have the potential to monitor, control, and regulate certain facets of their own cognition, motivation, as well as behavior (Pintrich, 2004; Zimmerman, 2000). This involves altering their motivational beliefs in order to adapt to their academic demands and ultimately improve their learning (Zimmerman, 2000). Students who exhibit greater independence for their learning rather than depending on the support of their teachers and parents are more likely to be more intrinsically motivated, as well as more likely to possess higher self-confidence towards their learning. Based on these first two assumptions, self-regulated learning researchers have examined students' use of strategies to regulate their level of effort in academic tasks by using several cognitive and motivational strategies (Wolters, 1998). A sample of 115 college students responded to a Likert-type survey and an open-ended questionnaire which presented them with three motivational problems related to academic tasks. It was found that students' motivational regulation was positively related to their goal orientations, use of cognitive strategies, and grade in the course (Wolters, 1998). Additionally, the notion of students' ability to regulate their own motivation has been linked to students' effort, persistence, and achievement (Pintrich 2004; Wolters, 1999; see Wolters, 2003).

The third assumption is that learners use some type of goal or criterion in order to assess their progress in the learning process (Pintrich, 2004). The learner generally sets a standard or goal to strive for in their learning then monitors his or her progress towards attaining this goal. In order to successfully meet their goal, the learner may adapt and regulate their cognition, motivation, and behavior accordingly. Moreover, regulating one's cognition entails controlling several cognitive strategies for learning and utilizing them in order to improve their learning and performance (Garcia & Pintrich, 1994).

The last assumption of self-regulated learning is that self-regulatory activities are mediators between personal and contextual characteristics and actual achievement or performance (Pintrich, 2004). Specifically, the learner's self-regulation of their cognition, motivation, and behavior mediates the relations between personal (e.g. cultural or demographic factors) and environmental factors (e.g. family or classroom environment), and the learners' ultimate achievement.

The process of self-regulation involves three cyclical phases: forethought, performance, and self-reflection (Zimmerman, 2002). The first phase, forethought, refers to processes and thoughts which occur before the effort to learn. This phase involves an analysis of the task at hand which includes setting a goal and planning the strategies the learner will utilize. This phase also includes self-motivation beliefs regarding their beliefs about learning. Key components of this aspect of the process include self-efficacy beliefs about their personal capability to learn (Bandura, 1986) as well as their learning goal orientation which refers to valuing the process of learning for its own merits (Zimmerman, 2002). The performance phase is next in the process and it refers to the processes that occur during behavioral implementation. Two major components in this

phase include self-control and self-observation. Self-control refers to the use of specific methods or strategies thought of in the forethought stage such as imagery, self-instruction, attention focusing, and task strategies. Self-observation refers to self-recording personal events or self-experimentation to find out the cause of these events (Zimmerman, 2002). Self-reflection makes up the last phase in the process and includes processes that occur after each learning effort such as self-judgment and self-reflection, for example. As previous explicated, the process of self-regulation as postulated by Zimmerman (2002) is cyclical. That is, self-reflections from prior efforts to learn affect subsequent forethought processes which in turn affects performance and so on.

The assumption of self-regulated learning previously explicated, which contends that self-regulatory activities act as mediators between the learners' personal and environmental factors and their achievement, is central to the variables chosen in the current study. Specifically, the research design of the current study includes two types of motivational beliefs often used to describe self-regulated learners: goal orientations and self-efficacy. Also, the use of metacognitive strategies, which is often viewed as a core feature of being a self-regulated learner, will also be considered.

It is proposed that these three variables will act as mediators between perceived maternal parenting styles and students' math performance. Taking the contentions of self-regulated learning as proposed by social cognitive theory, the personal factor in the current study is the student's ethnic background, in this case Hispanic. Furthermore, the environmental factor is the parenting practices they are exposed to in their upbringing. Ultimately, these self-regulatory activities will mediate the relations between maternal

parenting styles and students' math performance. Each of these components of self-regulated learning will be discussed next.

   Goal orientations and academic achievement. *Achievement goal theory* is a prominent theory that explains the motivation and achievement of students. One primary proposition of this theory focuses on how students determine their goals in academic settings. Research on achievement goal theory proposes that understanding the reasons students engage in academically related work can shed light on learning about students' motivation and achievement behavior (Ames, 1984; Dweck & Leggett, 1988; Pintrich, 2000).

   Early research on achievement goal theory suggested only two types of achievement goals to explain student achievement and motivation, which were mastery or performance goals (Ames, 1984). With *mastery goals*, the purpose of engagement is developing competence and success is defined by mastering a task based on intrapersonal standards of improvement over previous achievement. Mastery goals manifest as an orientation toward deep learning, acquisition of new skills, and improvement (Elliot, 1999). Students who endorse mastery goals have often been shown to be more intrinsically motivated, display a positive attitude towards learning, and take pride in their work especially when the work is challenging (Ames & Archer, 1988; Butler & Winne, 1995; Meece, Blumenfeld, & Hoyle, 1988). In contrast, *performance goals* refer to demonstrating competence relative to others and success is defined according to interpersonal standards (Ames, 1992). Students who endorse performance goals have been found to avoid tasks which they find challenging and tend to use superficial engagement such as rushing through work to finish quickly or copying answers from

other students (Elliott & Dweck, 1988; Meece et al., 1988). Not all research has,

however, found that performance goals are linked to maladaptive outcomes. For

example, Harackiewicz and colleagues (1997) found that although students adopting

mastery goals were more interested in the class, students adopting performance goals

achieved higher levels of performance as measured by their final grade in the class.

Elliot and Harackiewicz (1996) sought to make sense of the conflicting findings

related to performance goals. Specifically, they proposed that performance goals

encompass either approaching favorable judgments and demonstrating competence or

avoiding unfavorable judgments and avoiding demonstrating competence (Elliot &

Harackiewicz, 1996). Thus, performance goals were split into performance-approach and

performance-avoidance goals creating a three factor model commonly used to explain

achievement goals.

Elliot and McGregor (2001), argued that as with performance goals, mastery

goals should also be distinguished as either approach or avoidance. Mastery-avoidance

was added as the fourth type of achievement goal creating the 2x2 framework (Elliot &

McGregor, 2001; Pintrich, 2000). The framework takes into consideration the means of

approaching a goal or demonstrating ability, as well as the extent to which a student

avoids not mastering a goal or not demonstrating his or her ability. Specifically, the four

achievement goals which are conceptualized in a 2x2 framework 1) mastery-approach, 2)

mastery-avoidance, 3) performance-approach, 4) performance-avoidance.

There has also been distinctions made between the conceptualization of

"achievement goals" and "goal orientations." Proponents of the term "achievement

goals" argue that goals are best represented as aim and achievement goals are a

combination of reason and aim for the given task (Elliot, 2005; Pintrich, 2000). While others in the achievement goal theory literature refer to the reasons students engage in academic work as "orientations" (Ames & Archer, 1988). Orientations can be described as the reasons students take on tasks for learning.

Students adopting a *mastery-approach* goal orientation seek to take on the goals of understanding and learning (Harackiewicz, Barron, & Elliot, 1998; Pintrich, 1999). Those who adopt this type of goal orientation are concerned with trying to increase their understanding and competence by learning as much as possible. Students with a *mastery-avoidance* goal orientation focus on avoiding misunderstanding. Additionally, students adopting this type of goal orientation seek to learn in order to avoid a lack of mastery or forgetting what they have learned. They strive in order to avoid not mastering a task or striving not to lose their skills, abilities, or knowledge (Elliot & McGregor, 2001).

Performance goals can also be described as either approach or avoidance (Anderman & Wolters, 2006; Harackiewicz, et al., 1998; Pintrich, 1999). A *performance-approach* goal orientation focuses on outperforming others. Students with a performance-approach goal orientation seek to demonstrate their ability in relation to those around them and are motivated by proving their superiority. Conversely, students adopting a *performance-avoidance* goal orientation seek to avoid looking incompetent or not knowing as much compared to those around them (Anderman & Wolters, 2006).

Research has revealed that the goal orientations students adopt are associated with many aspects of their academic achievement. Mastery goal orientations are generally linked to positive outcomes while performance goal orientations are usually linked to negative academic outcomes. For example, using the 2x2 framework by Elliot and

McGregor (2001), it was found that mastery-approach goal orientation positively predicted undergraduate students' test scores while performance-avoidance goal orientation negatively predicted their test scores (Eum & Rice, 2011). Performance-avoidance goals have also been correlated with self-handicapping behaviors such as procrastinating on homework and cheating (Urdan, 2004). Another study, using the revised goal orientation theory, found no significant differences (Sideridis, 2003).

Looking specifically at students' math achievement, recent research suggests that the goal orientations students adopt play a vital role in predicting their performance on reading tasks in a sample of 448 school-aged students (Magi, Lerkkanen, Poikkeus, Rasku-Puttonen, & Kikas, 2010). In another study, using a trichotomous goal framework, researchers found that mastery-approach goal orientation positively predicted higher scores on standardized math tests in a diverse sample of adolescents ($N = 2,000$) from an urban school district (Keys, Conley, Duncan, & Domina, 2012). Similarly, other research has examined the influence of goal orientations on students' grades. Although not with a sample of secondary students, researchers have shown that college students who endorse mastery goals earned significantly higher test scores (Hoyert & O'Dell, 2009; Roebken, 2007).

Although there has been research conducted looking at the relationship of goal orientations predicting academic achievement, additional research is needed using more diverse samples. In the current study, the relationship between Hispanic high school students' four goal orientations and math performance will be examined while also considering their perceived maternal parenting styles.

Self-efficacy and academic achievement. As previously explicated, social learning theory postulates that people have a measure of agency over important aspects of their learning and they exercise this agency in a productive manner in order to pursue important goals (Bandura, 1986). Along the same lines, self-efficacy theory states that people assess their skills and abilities and convert these beliefs about their capability into purposeful action (Bandura, 1997). *Self-efficacy* is defined as people's beliefs about their capabilities to produce a designated level of performance that exercises influence over events that affect their lives (Bandura, 1997). Specifically related to academics, is the aspect of *academic self-efficacy* which refers to students' perceived competence with respect to academically related tasks (Schunk & Pajares, 2002).

Research findings over the past few decades have consistently found that self-efficacy beliefs are related to many aspects of academic performance (Bandura, 1997; Multon, Brown, & Lent, 1991; Schunk, 1981; Schunk & Miller, 2002). Characteristics of students who have a high sense of self-efficacy beliefs have been addressed in the literature. Those students with high self-efficacy tend to undertake challenging tasks, expend greater effort, show increased persistence, and greater intrinsic interest. Consequently, it was reported that these types of students generally attain higher intellectual achievements (Schunk & Pajares, 2002). Moreover, many experts on self-efficacy contend that self-efficacy beliefs are better predictors of academic success than are actual abilities (Bandura, 1993; Mills, Pajares, & Herron, 2007; Zimmerman & Clearly, 2006).

Early research on goal orientation and self-efficacy revealed that those with a mastery goal orientation and low self-efficacy show an increase in effort which,

therefore, yields increased performance and more favorable achievement outcomes (Elliot & Dweck, 1988). Moreover, several studies have also found that self-efficacy is associated with many adaptive academic outcomes such as cognitive engagement, use of self-regulatory strategies, and high grades (Linnenbrink & Pintrich, 2002; Pintrich & DeGroot, 1990; Wolters, Yu & Pintrich, 1996).

In an interesting study where researchers experimentally increased students' self-efficacy on a novel problem-solving task, it was found that students who received arbitrary feedback used more effective strategies and were more successful in their problem solving than students in the control group (Bouffard-Bouchard, 1990). Although dated, this study is an example of the notion that students' self-efficacy beliefs contribute to their academic performance regardless of their ability (Bandura, 1993).

In a recent study, Komarraju and Nadler (2013) surveyed 407 undergraduate students regarding their perceived self-efficacy beliefs, motivational orientation, metacognitive strategies, and resource management strategies. It was revealed that those with a high sense of self-efficacy viewed intelligence as innate and unchangeable and pursued mastery goals. In the same study, it was also found that effort regulation partially mediated the relationship between self-efficacy and GPA for students with high self-efficacy.

Academic self-efficacy is certainly a crucial construct to study, however, it is especially critical to examine during the adolescent years. The adolescent years are sometimes viewed as a period of declining academic motivation due the emotional complexity of this stage in life. Additionally, factors such as poor fit between the adolescent and the school environment, hormonal changes, and a growing awareness of

social and academic competition are prevalent with this age group (e.g. Eccles, et al., 1993; Eccles, 2004; Ryan, Shim, & Makara, 2013). Additionally, as previously reviewed, research has repeatedly found that self-efficacy is significant predictor of academic achievement; however, less is known regarding the role this construct plays as a mediator between maternal parenting styles and students' performance. This study will address this as well as add to the literature in this realm of research by examining the influence self-efficacy has on the math performance of Hispanic high school students.

   Metacognitive strategies and academic achievement. The term *metacognition* is frequently associated with the work of developmental psychologist John Flavell (1979). According to the early work of Flavell and his colleagues (1979, 1987), metacognition consists of metacognitive knowledge as well as experiences or regulation. It is defined as higher order thinking which involves active control over the cognitive processes engaged in learning (1979). Furthermore, students' metacognitive strategies for planning, monitoring, and modifying their cognition are encompassed by the construct of self-regulated learning (e.g., Brown, Bransford, Campione, & Ferrara, 1983; Corno, 1986; Zimmerman & Martinez-Pons, 1986, 1988). Metacognition plays an integral role in the success of learners by enabling them to plan the best approach for a given task, to monitor their own comprehension, as well as evaluate their progress toward the completion of a task (Kleitman, 2008). These three strategies of planning, monitoring, and evaluation, according to the general agreement among researchers, are the most critical for regulating the learning process (e.g. Boekaerts, 1999; Spoerer & Brunstein, 2006; Winne, 1995).

Research on metacognition has explored the relations of this construct on many facets of academic achievement. For example, using a path analysis model to determine the relationships between students' goal orientations and teacher self-efficacy in predicting self-confidence and academic achievement, researchers surveyed a group of sixth graders ($N = 177$). It was revealed that students with stronger metacognitive beliefs and those who utilized metacognitive strategies more often, were more likely to report higher math test scores as well as higher self-confidence (Kleitman & Gibson, 2011).

Similarly, empirical evidence suggests that the use of metacognitive strategies in secondary students has a positive impact on math achievement (Dignath, Buettner, & Langfeldt, 2008; Hattie, Biggs, & Purdie, 1996; Kistner, Rakoczy, & Otto, 2010). Kistner and colleagues (2010) used a mixed-methods research design to investigate twenty teachers' direct and indirect promotion of metacognitive strategies in teaching a high school math lesson ($N = 538$). It was observed that a significant amount of strategy teaching takes place implicitly; however, results revealed that explicit strategy instruction was associated with gains in students' performance in math.

Related to the use of metacognitive strategies, using an experimental research design, researchers used metacognitive training to teach a group of high school students strategies to enhance the two metacognitive components of knowledge and skills. Results indicated that the students ($N = 48$) in the experimental group had significantly higher math problem-solving scores (Pennequin, Sorel, Nanty, & Fontaine, 2010).

This study will make a contribution to the research literature by further investigating the relations between metacognitive strategy use and students' performance. Additionally, previous research has revealed that the self-regulatory strategies students

utilize may be contingent upon specific settings such as a particular subject (Butler & Winne, 1995; Cartier, Butler, & Bouchard, 2010; Weinstein, 1994; Zimmerman, 2000). Based on these findings, the current study will consider students' performance related specifically to math.

Parenting Styles and Self-Regulated Learning

Self-regulated learning is a crucial facet in understanding students' learning processes as well as their acquisition of knowledge and skills (Pintrich, 2004). As previously reviewed, research has repeatedly examined the characteristics of self-regulated learners and the factors that influence their academic success. Specifically, the ability to have control over their learning and to develop self-regulatory strategies has been associated with parenting styles in the research literature. One such study ($N =$ 1011) conducted using multi-level analyses, found significant differences among the four parenting style groups with respect to academic performance, interest in schoolwork, aspiration for education, involvement in extracurricular activities, and self-regulatory strategies (Tam & Lam, 2003).

A cornerstone of children's academic success is the parenting style by which they are raised (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Steinberg, et al., 1992b). Given these findings and in order to advance our understanding of self-regulated learning, it seems important to examine specific components of self-regulated learning for math as they relate to maternal parenting styles. In particular, the relations of perceived maternal parenting styles as predictors of goal orientations will be examined in order to more deeply understand students' motivation towards learning math. Next, the relations of perceived maternal parenting styles as predictors of students' self-efficacy

towards math will be explicated. Last, students' use of metacognitive strategies will be examined as they relate to perceived maternal parenting styles.

Parenting styles and goal orientations. In order to gain a comprehensive understanding of the influences on the goal orientations students choose to adopt, students' background factors such as their ethnic background and the parenting practices utilized in their upbringing need to be considered. Specifically, the parenting styles students' parents implement have been linked to students' goal orientations (Gonzalez, Holbein & Quilter, 2002; Gonzalez & Wolters, 2006).

In a study with a sample of racially diverse high school students, researchers revealed that the authoritative parenting style was associated with a mastery goal orientation while the authoritarian and permissive parenting styles were associated with a performance goal orientation (Gonzalez et al., 2002). While previous studies on parenting styles have found differences between racial groups (Steinberg et al., 1992a), Gonzalez and colleagues (2002) did not find such differences. In another study, Gonzalez and Wolters (2006), found that authoritative parenting style was associated with the mastery-approach goal orientation in high school math students ($N = 140$). Additionally, in the same study, it was found that permissive and authoritarian parenting styles were related to a performance-approach goal orientation.

The purpose of this study was to build on the research linking parenting styles and goal orientations as it is scarce. In the current study, Hispanic students' background factors (ethnicity and parenting styles) will be examined in order to understand the influence they have on the goal orientations they chose to adopt.

Parenting styles and self-efficacy. According to social cognitive theory, parents play a crucial role in fostering self-efficacy beliefs in their children (Bandura, 1994). The type of parenting styles parents utilize in raising their children have a significant precursor for the development of self-efficacy, particularly with regards to academics. Previous research has revealed that parenting styles influence the development of self-efficacy beliefs (e.g. Bradley & Corwyn, 2003; Eccles, Wigfield, & Schiefele, 1998; Jacobs & Eccles, 1992). Specifically, in samples of adolescent students, researchers repeatedly found that those with authoritative parents reported having higher self-efficacy beliefs (Boon, 2007; Hoang, 2008; Juang & Silbereisen, 2002). Still, other research revealed inconsistent findings (Burke, 2006; Rivers, 2006).

Boon (2007) used structural equation modeling to test a model linking authoritative and authoritarian parenting styles via mastery goals, self-efficacy and self-handicapping to students' achievement. Data were gathered from self-report measures administered to 879 junior high and high school students. Results indicated that self-efficacy mediates the effects of parental style through the mastery goal orientation to achievement for reading and math. Additionally, it was found that those students who perceived their parents as neglectful were more likely to report higher self-handicapping and lower mastery goals and self-efficacy beliefs. In contrast, the authoritative parenting style was found to predict higher math achievement via mastery goals and self-efficacy and lower self-handicapping behaviors (Boon, 2007).

The extant research on self-beliefs argues that self-efficacy is domain-specific (Bandura, 1997; Bong, 2001; Bong, Cho, Ahn, & Kim, 2012; Bong & Clark, 1999). Bong (1998) found that self-efficacy beliefs were much stronger in mathematics-related

subjects areas compared to verbal subject areas. Additionally, self-efficacy beliefs were found to be stronger for older students than their younger counterparts (Bong, et al., 2012). Given these findings, it is imperative that self-efficacy is studied in relation to a specific domain; however, a limited number of studies do this. In order to make a meaningful contribution to the existing research, the current study will evaluate the maternal parenting styles as perceived by Hispanic high school students' as it relates to their self-efficacy beliefs for the math.

Parenting styles and use of metacognitive strategies. Parenting behavior is important in the development of self-regulated learning and the use of metacognitive strategies. For example, research has shown that children whose parents modeled metacognitive strategies in front of them, tended to exhibit these similar behaviors in their own self-regulatory learning (Martinez-Pons, 1996). Relatedly, research on the self-regulatory learning of adolescents revealed a significant relationship between authoritative parenting and the self-regulatory strategies of their children (Purdie, Carroll, & Roche, 2004). Researchers surveyed 214 Australian high school students and their parents on the parenting practices and self-regulatory strategies utilized. It was found that those students whose parents indicated that they used more authoritative parenting practices were more likely to report using self-regulatory strategies such as goal-setting and self-monitoring (Purdie et al., 2004).

Previous research has revealed that secondary Turkish students with authoritative parents are more likely to utilize metacognitive strategies (Erden & Uredi, 2008). Other research has examined academically related variables that are in-line with metacognition. For example, in a sample of a14 year-old students in Finland, researchers found that

parenting style was related to students' achievement strategies (Aunola, Stattin, & Numi, 2000). It was found that students with authoritative parents exhibited higher levels of adaptive achievement strategies such as persistence and higher levels of task-relevant behavior. Similarly, research examining parenting styles and the use of study strategies revealed that adolescents with authoritative parents tended to use more study skills than their peers with authoritarian and permissive parents (Boveja, 1998).

With the exception of these few studies, which were conducted internationally, research in this area is limited. The current study will extend the previous findings by examining the link between maternal parenting styles and Hispanic high school students' use of metacognitive strategies for math.

Purpose of Study

The present study makes advancements in the research pertaining to parenting styles and academic achievement by investigating two related questions. First, how are the three types of maternal parenting styles related to Hispanic high school students' math performance? Second, what are the mediating effects of perceived goal orientations, self-efficacy, and use of metacognitive strategies on the relationship of maternal parenting styles and Hispanic high school students' math performance?

Method

Participants

Students surveyed were from a large public suburban high school in Texas who were enrolled in either Algebra I, Geometry or Algebra II at the time the surveys were completed. The school is in a district that is among the 30 largest districts in the state and during the 2012-2013 school year had a total enrollment of approximately 3,457 students. The student body is racially diverse: 64.4% Hispanic, 14.5% African American, 10.1% Asian, and 11% Caucasian. Also, 54.4% of the students are classified as economically disadvantaged.

In total, 478 students completed the survey. Since the focus of the present study was to examine maternal parenting styles related to only Hispanic students, students who did not report their race as Hispanic were removed from the analysis. Additionally, a total of 5 participants were removed from the final dataset because: (a) they did not identify a maternal figure was present in their upbringing ($n = 2$), (b) they left one or more pages blank ($n = 2$), or (c) they provided patterned responses on a large portion of the survey ($n = 1$). Thus, the final pool of participants for this study was 312 comprised of 52% female and a mean age of 17.43 years ($SD = 1.08$). The majority of the students for the sample were either Sophomores (19.9%) or Juniors (57.7%).

Procedure

Data were collected in the Spring semester of 2013 using a self-report survey comprised of five sections. Students invited to participate were those taking either Algebra I, Geometry or Algebra II during the 2012-2013 school year. Additionally,

participants were required to have a maternal figure present in their upbringing. Parental consent was obtained by sending home consent letters explaining the nature of the research to those students invited to participate. Given the large proportion of Hispanic students, the consent letter was sent home in both English and Spanish languages. Included in the consent letter was consent to access students' records in order to obtain their end of course exam scores for math.

Due to district regulations, all interaction with the teachers and survey administration was facilitated by an Assistant Principal at the school. After distributing the consent letters, the Assistant Principal gave students one week to return the signed consent letters. Those who returned the consent letters signed by their parent(s) were taken to a designated room by the Assistant Principal where they were briefed on the purpose of the study and asked to sign an assent letter if they agreed to participate. Participants were given 45 minutes to complete the self-report survey and had the option to retract their assent at any time.

Students were asked to write their student identification number on their surveys in order to link their survey responses with their end of course exam grades. Additionally, in order to ensure students' confidentiality, the database of end of course exam scores did not have any identifying information other than the students' identification number. Students who chose to participate were given the option of entering in a drawing for a $50 Amazon gift card. Three students' names were drawn at random by the Assistant Principal and were each awarded with a gift card.

Measures

     Parenting style (30 items). The Parental Authority Questionnaire (PAQ; Buri, 1991) was used to measure students' perception of their mother's parenting style. The three parenting styles measured with this questionnaire are those proposed by Baumrind (1971): authoritarian, authoritative, and permissive. Authoritarian represents the extent to which students believe their mothers are controlling and strict in their parenting. While authoritative describes the students' perception that their mother shares the reasoning behind polices imposed. Finally, permissive is the extent to which the students feel their mothers are laissez faire in her parenting.

     Participants responded to items using a 5-point Likert-type scale with responses from (1) "strongly disagree" to (5) "strongly agree" (See Appendix A). An example of an item for the PAQ is *"My mother seldom gives me expectations and guidelines for my behavior."* The total score was computed by averaging their responses for each of the types of parenting styles. A high score on this scale indicates a higher perception of the particular parenting style compared to students who reported lower scores. The reliability coefficients for the three scales in this study were acceptable and consistent with Buri's (1991) reported Cronbach's alpha coefficients: authoritarian (.85), authoritative (.77), and permissive (.75).

     Achievement Goals (12 items). Using the 2x2 framework, items from the Achievement Goal Questionnaire-Revised (AGQ-R; Elliot & Murayama, 2008) was utilized to assess students' achievement goals for their math class. For the purpose of the study, the items on the AGQ-R were modified to reflect students' achievement goals specifically toward their math class. Participants used a 5-point Likert-type scale with (1)

"strongly disagree" to (5) "strongly agree" to respond to items regarding their current math class (See Appendix B). The survey measured the four achievement goals as conceptualized by the 2x2 framework. The mastery-approach achievement goal focuses on seeking to take on the goals of understanding and learning. The mastery-avoidance achievement goal focuses on avoiding misunderstanding. The performance-approach achievement goal focuses on outperforming others. The performance-avoidance achievement goal seeks to avoid looking incompetent or not knowing as much compared to those around them. The Cronbach's alpha coefficients for the current study were acceptable: mastery-approach (.76), mastery-avoidance (.71), performance-approach (.76), and performance-avoidance (.77).

Self-efficacy (5 items). In order to measure students' self-efficacy for math, the Academic Self-Efficacy Scale from the Patterns of Adaptive Learning Scales (PALS; Midgley et al., 2000) was utilized. Participants used a 5-point Likert-type scale with (1) "not at all true" to (5) "very true" to respond to items measuring perceptions of their competence to do math (See Appendix C). Students with higher scores on this measure are more confident in their math skills in comparison to those who report lower scores. An example of a self-efficacy item on the PALS is *"Even if the math work is hard, I can learn it."* The Cronbach's alpha for the self-efficacy scale for the current study was .72.

Metacognitive strategies (9 items). Items to measure students' use of metacognitive strategies assessed students' planning, monitoring, and regulatory strategies for completing their work in their math class (Wolters, 2004). Participants used a 7-point Likert type scale with (1) "strongly disagree" to (7) "strongly agree" to respond to questions regarding their use of metacognitive strategies (See Appendix D).

An example of an item is *"Before starting a math assignment, I try to figure out the best way to do it."* Students with higher scores on this measure use more planning, monitoring, and regulatory strategies in comparisons to those who report lower scores. The Cronbach's alpha coefficient for the current study was .60.

Demographics (14 items). Students were asked to provide responses to 14 items pertaining to demographical information (See Appendix E). Students' were asked to provide their seven digit district identification number, their homeroom teacher's name, and the math class they were enrolled in order to link their surveys with their end of course grades. Additionally, their birth month and year were asked in order to calculate their age at time of survey completion. They were asked to indicate their class level by circling one of four choices (freshman, sophomore, junior, or senior) and to indicate their expected graduation year. Racial background was presented in five categories and students were asked to check all categories that applied to them. In order to determine which students' surveys would be used for this study, students were asked to circle "yes" or "no" to indicate whether they had a maternal figure present in their household.

Students were asked to write in the number of hours they worked for pay, the number of hours they studied math, and the total number of courses they were enrolled in. They were also asked to write in the total number of people living in their household. Finally, students were asked to indicate their plans after graduating high school by selecting from five choices (attend 4-year university, community college, vocational/trade school, join military, or work only).

Math performance. Math performance was measured in terms of percentiles obtained on a state exam given to students at the end of the course to measure their

academic performance on state mandated standards for knowledge and skills. These exams are given for core secondary-level courses to all students at the end of the course, usually in May. At the time these data were collected for this study, the scores obtained on these exams were worth 15% of students' final grade in the course and were a part of their graduation requirements.

The exam for Algebra I (51 items) covered five categories: functional relationships, properties and attributes of functions, linear functions, linear equations and inequalities, and quadratic and other linear functions. The Geometry exam (52 items) was comprised of five categories: geometric structure, geometric patterns and representations, dimensionality and the geometry of location, congruence and the geometry of size, and similarity and the geometry of shape. Seven categories made up the Algebra II exam (50 items). These categories were: properties and attributes of functions, representational tools to solve problems, properties of quadratic functions, representations of quadratic relations, properties of square root functions, and properties of exponential and logarithmic functions. All exams were multiple choice (4 choices), paper-pencil administration. The time limit for each exam was four hours.

The exams were scored by a branch of the state government responsible for education. Scaled scores were provided by the state and were converted into percentile ranks by the district using a formula for converting scaled scores to percentile ranks. Converting scaled scores to percentile ranks facilitated drawing parallel comparisons across the three math exams. These percentiles were provided to the principal researcher by the school administration and were used to measure students' math performance for the three classes measured students' relative ability compared to other students.

Chapter IV

Results

The results are presented in five sections. First, the data screening procedures are explained. Second, descriptive statistics and bivariate correlations for the main variables will be presented. Next, regression analyses examining the relations of maternal parenting styles on math performance, the relations of maternal parenting styles on the potential mediators, as well as the relations of the potential mediators on math performance are presented separately. A multiple regression model examining whether the goal orientations, self-efficacy, and metacognitive strategies mediate the predictive effect of maternal parenting styles on students' math performance was employed following the approach for examining mediation as proposed by Baron and Kenny (1986). The results from this step are presented in the fourth section. Finally, the results from Sobel follow-up testing are presented.

Data Screening

Data were analyzed using IBM Statistical Package for the Social Sciences (SPSS) software Version 21.0 (IBM Corp., Armonk, NY). Prior to performing the regression analyses, several data screening procedures were conducted. First, data were screened for missing values. Completed surveys with missing data were minimal (less than 2%), and it was evident that omitted items occurred at random. For this reason, it was appropriate to handle missing data for further statistical analyses by using the Listwise deletion method where cases were dropped from an analysis if they had a missing value in at least one of the specified variables (Barladi & Enders, 2010). Second, the data were screened for patterned responses. In other words, cases where participants provided the

same response for over 10 consecutive questions were removed from the final data pool.

For example, one participant provided the consecutive response of "5" for more than 50%

of the survey. Among the items were negatively worded items that were also rated as

"5", therefore, it was evident that the responses were patterned.

All of the main variables involved in the analyses were also checked for

univariate outliers, but none were found. Outliers were defined by whether an observed

score for a particular variable was above or below three standard deviations from the

variable mean.

Descriptive Statistics and Bivariate Correlations

Cronbach's alpha coefficients, descriptive statistics, and bivariate correlations

among the main variables in the regression analyses are reported in Table 1. Cronbach's

alpha coefficients ranged from acceptable ($\alpha = .60$) to good ($\alpha = .85$). Although reliability

for the metacognitive strategies measure was somewhat low (.60), it is still within

acceptable levels for research purposes (Anastasi & Urbina, 1997).

Descriptive statistics show that the means for the parenting styles were 3.21

(permissive), 3.51 (authoritarian), 3.66 (authoritative) on a five-point scale. Students

reported an average of 3.79 for self-efficacy for math on a five-point scale indicating that,

on average, students found the statements regarding their beliefs about their capabilities

for math to be "somewhat true." Students' average reported use of planning, monitoring,

and regulatory strategies was found to be 5.10 on a seven-point scale.

Table 1

Cronbach Alphas, Means, Standard Deviations, and Pearson Correlations among the Main Variables in Regression

Variable	α	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Authoritarian	.85	3.51	.68	----	.12*	-.10	.12*	.15**	.22**	-.06	0.00	.03	.23**
2. Authoritative	.77	3.66	.61		----	.01	.51**	-.04	-.02	-.03	.33**	.35**	.29**
3. Permissive	.75	3.21	.70			----	-.06	-.14*	-.07	.30**	.15**	.15**	-.24**
4. Mastery-approach	.76	3.70	1.06				----	.01	.02	-.02	.27**	.16**	.19**
5. Mastery-avoidance	.71	4.34	.65					----	.05	.04	-.01	-.10	.09
6. Performance-approach	.76	4.00	1.07						----	-.09	-.07	-.04	.18**
7. Performance-avoidance	.77	3.40	1.21							----	.13*	.02	-.11
8. Self-efficacy	.72	3.79	0.87								----	.22**	.04
9. Metacognitive strategies	.60	5.10	1.37									----	-.03
10. Math performance	-	-	-										----

*Notes. N = 312; *p < 0.05. **p < 0.01.*

Bivariate correlational analyses were used to determine if significant relations existed between the variables of interest. Using Cohen's (1988) criteria to interpreting the strength of the correlations, it was found that all three parenting styles were correlated with math performance, several of the four goal orientations as well as the measures of self-regulated learning.

Although authoritarian and authoritative parenting styles were very weakly correlated to each other ($r = .12$, $p < .05$), they each showed a pattern of positive associations with math performance ($r = .23$, $p < .01$; $r = .29$, $p < .01$), respectively. These relations were stronger for the authoritative parenting style and this style was positively related to self-efficacy ($r = .33$, $p < .01$) and use of metacognitive strategies ($r = .35$, $p < .01$), while authoritarian was not. Authoritarian and permissive were not correlated with each other nor were the authoritative and permissive parenting styles.

Additionally, the permissive parenting style was weakly positively associated with self-efficacy ($r = .15$, $p < .01$) and metacognitive strategies ($r = .15$, $p < .01$) and negatively correlated with students' math performance ($r = -.24$, $p < .01$).

Significant relations were also found between the three parenting styles and the four goal orientations. The authoritative parenting style was found to be strongly positively correlated with mastery-approach goal orientation ($r = .51$, $p < .01$). Additionally, the authoritarian parenting style was found to be positively correlated with three of the goal orientations: mastery-approach ($r = .12$, $p < .05$), mastery-avoidance ($r = .15$, $p < .01$), and performance-approach ($r = .22$, $p < .01$); however, these associations were fairly weak. Finally, the permissive parenting style was moderately positively

correlated with the performance-avoidance goal orientation ($r = .30$, $p < .01$) and weakly

negatively correlated with mastery-avoidance goal orientation ($r = -.14$, $p < .01$).

Regression Analyses

Preliminary inspection of the data suggested that the assumptions for multiple

regression were met; therefore, the analyses were conducted. First, it was determined

that the sample size was large enough to accommodate the number of predictors in the

models. Using Cohen's (1988) statistical power analysis as the guideline for estimating

the desired sample size, the number of possible independent variables was taken into

consideration. Since there were three parenting styles, four goal orientations, self-

efficacy, and metacognitive strategies (9 in total), a sample of at least 113 was required.

Thus, the sample size obtained for the current study of 312 was sufficient. Second, an

inspection of the Pearson correlations suggested that correlations among predictor

variables were not very high (less than 0.75) suggesting that multicollinearity was not a

threat of distorting the findings of the regression analyses. For the outcome variables, the

Tolerance values were greater than 0.01; therefore, it was assumed that multicollinearity

did not pose a problem. Additionally, no Variance Inflation Factor (VIF) statistics

exceeded 10; therefore, it was decided that multicollinearity diagnostics were within the

acceptable range. Finally, the assumptions of linearity, homoscedasticity, and

independence of residuals of the main variables included in the regression analyses were

also checked and none were violated (Osburne & Waters, 2002).

Associations between maternal parenting styles, goal orientation, self-efficacy,

use of metacognitive strategies, and math performance were quantified using mediation

analyses based on principles of Baron and Kenny's (1986) causal steps approach (Figure

1). In using these analyses, a sequences of requirements must first be met in order to

suggest that a mediation effect has occurred: (1) the initial predictor variables must be

associated with the outcome (path c), (2) the initial predictor variables are associated with

the proposed mediators (path a), (3) the mediator variables are associated with the

outcome (path b), and (4) the initial predictor loses its effects on the outcome once the

mediators are added as second predictors in the regression model (path c'). Before the

actual test of mediation can take place, it must be ensured that all the regressions in each

step are statistically significant.

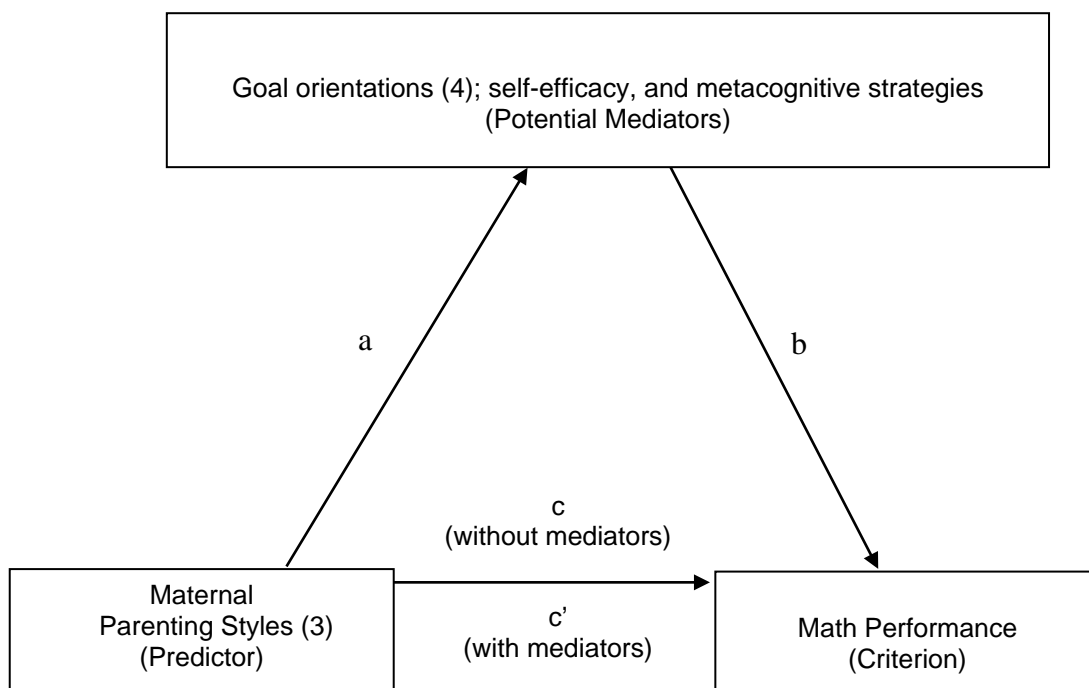*Figure 1*. Model for testing for potential mediators

Relations of maternal parenting styles on mathematics performance. In the

first step, a multiple regression analysis was conducted with the three maternal parenting

styles (predictor variables) predicting students' math performance (criterion variable) to

test the direct effect alone and to ascertain whether the initial variable is associated with

the outcome. This step was crucial in determining whether there is an effect that can be mediated (Baron & Kenny, 1986).

It was found that each of the three parenting styles significantly predicted math performance directly while accounting for the other two styles. Results from these regression analyses are reported in Table 2. Specifically, the authoritarian parenting style was found to positively predict math performance while accounting for the other two parenting styles ($\beta = .18$, $t(308) = 3.32$, $p < .01$). Also, the authoritative parenting style positively predicted math performance ($\beta = .27$, $t(308) = 5.08$, $p < .001$). Inversely, with the permissive parenting style, the relationship was found to be negative ($\beta = -.22$, $t(308) = 3.32$, $p < .001$). These results indicate that maternal parenting styles are significant predictors of students' math performance; therefore, it was determined that the evaluation of potential mediators may be continued following the approach proposed by Baron and Kenny (1986).

Table 2

Summary of Multiple Regression Analyses Examining the Relations of Maternal Parenting Styles on Math Performance

Predictor variables	Math performance		
	B	$SE\ B$	β
Authoritarian	3.46	.10	.18**
Authoritative	5.86	.12	.27***
Permissive	-4.20	.10	-.22***
R^2		.17	
F		20.65***	

*Notes. N = 312; **p < 0.01. *** p < .001.*

Relations of maternal parenting styles on goal orientations, self-efficacy, and metacognitive strategies. The next step involved conducting a multiple regression with all three maternal parenting styles (predictor variable) predicting each of the mediator variables (goal orientations, self-efficacy, and metacognitive strategies). This step was necessary in order to test for the path between the variables which show that the initial predictor variables are associated with each of the proposed mediators (see Figure 1, path a; Baron & Kenny, 1986).

The results from this step of the analyses are presented in Table 3. While accounting for the other two styles, the authoritarian parenting style positively predicted both mastery-avoidance and performance-approach goal orientations ($\beta = .15$, $t(308) = 2.57$, $p = .01$; $\beta = .22$, $t(308) = 3.90$, $p < .001$), respectively. Additionally, the authoritative parenting style positively predicted the mastery-approach goal orientation ($\beta = .51$, $t(308) = 10.31$, $p < .001$). Finally, the permissive parenting style negatively predicted mastery-avoidance goal orientation ($\beta = -.13$, $t(308) = -2.31$, $p < .05$) and positively predicted performance-avoidance goal orientation ($\beta = .29$, $t(308) = 5.35$, $p < .001$), also while accounting for the other two styles in the model.

Additionally, the authoritative and permissive parenting styles positively predicted the mediator self-efficacy, ($\beta = .33$, $t(308) = 6.17$, $p < .001$; $\beta = .14$, $t(308) = 2.63$, $p < .01$), respectively. Lastly, while accounting for the other two styles, the authoritative and permissive parenting styles also positively predicted the mediator metacognitive strategies ($\beta = .35$, $t(308) = 6.51$, $p < .001$; $\beta = .15$, $t(308) = 2.73$, $p < .01$), respectively. The results confirmed that the initial predictor variables are associated with

Table 3

Summary of Multiple Regression Analyses Examining the Relations of Maternal Parenting Styles on Goal Orientations, Self-Efficacy, and Metacognitive Strategies

Predictor	Mastery-approach			Mastery-avoidance			Performance-approach			Performance-avoidance			Self-efficacy			Metacognitive strategies		
	B	$SE\ B$	β	B	$SE\ B$	β	B	$SE\ B$	β	B	$SE\ B$	β	B	$SE\ B$	β	B	$SE\ B$	β
Authoritarian	.08	.01	.05	.14	.01	.15*	.35	.01	.22***	-.05	.01	-.03	-.03	.01	-.02	.01	.01	.01
Authoritative	.88	.01	.51***	-.05	.01	-.05	-.08	.01	-.05	-.06	.01	-.03	.47	.01	.33***	.78	.01	.35***
Permissive	-.09	.01	-.06	-.12	.01	-.13*	-.08	.01	-.05	.50	.01	.29***	.17	.01	.14**	.28	.01	.15**
R^2	.27			.04			.05			.09			.13			.14		
F	37.67***			4.56**			5.70**			10.01***			15.22***			16.96***		

Notes. $N = 312$; *$p < 0.05$. **$p < 0.01$. *** $p < .001$.

the proposed mediators as required in the approach as proposed by Baron and Kenny (1986).

Relations of goal orientations, self-efficacy, and metacognitive strategies on mathematics performance. The third step was to conduct a multiple regression with the mediator variables (goal orientations, self-efficacy, and metacognitive strategies) predicting students' math performance (criterion variable). This step was essential in order to determine if the proposed mediator variables are associated with the criterion variable (see Figure 1, path b; Baron & Kenny, 1986).

As presented in Table 4, results indicated that the mediators mastery-approach and performance-approach goal orientations significantly positively predicted mathematics performance while taking into account the other mediators in the model ($\beta =$ .18, $t(308) = 3.19$, $p < .01$; $\beta = .17$, $t(308) = 3.00$, $p < .01$), respectively.

Table 4

Summary of Multiple Regression Analyses Examining the Relations of Goal Orientations, Self-Efficacy, and Metacognitive Strategies on Students' Mathematics Performance

Predictor variables	Math Performance		
	B	*SE B*	*β*
Mastery-approach	2.32	.73	.18**
Mastery-avoidance	1.54	1.14	.08
Performance-approach	2.08	.70	.17**
Performance-avoidance	-1.05	.62	-.09
Self-Efficacy	.39	.91	.03
Metacognitive Strategies	-.52	.56	-.05
R^2		.08	
F		4.63***	

*Notes. N = 312; **p < 0.01. *** p < .001.*

Relations of Maternal Parenting Styles on Mathematics Performance, Goal

Orientations, Self-Efficacy, and Metacognitive Strategies

In the final step, a multiple regression was conducted with the proposed mediator

variables (goal orientations, self-efficacy, and metacognitive strategies) and the three

maternal parenting styles as predictor variables simultaneously predicting math

performance (see Figure 1, paths b and c). This step was necessary as it provided

information regarding the amount of significant variation that will be added by the six

mediator variables (four types of goal orientations, self-efficacy, and use of

metacognitive strategies) to the three maternal parenting styles (predictor variable) in

explaining students' math performance (criterion variable). Furthermore, as previously

explicated in the requirements 1, 2, and 3 above, significant associations between the

predictor variables, the proposed mediators, and the outcome variable are necessary

conditions in order to infer a mediated effect.

A summary of the results from the regression analyses are presented in Table 5.

The overall model was significant, $R^2 = .20$, $F(9, 302) = 8.32$, $p < .001$. It was revealed

that while controlling for the mediators, parenting style was still a significant predictor of

math performance although the effect was weakened. Specifically, it was found that

authoritarian parenting style ($\beta = .14$, $t(308) = 2.58$, $p < .01$), authoritative parenting style

($\beta = .20$, $t(308) = 4.69$, $p < .001$), and permissive parenting style ($\beta = -.19$, $t(308) = -3.34$,

$p < .01$) were all significant predictors of students' math performance.

Table 5

Summary of Multiple Regression Analyses for Examining the Relations of Maternal Parenting Styles, Goal Orientations, Self-Efficacy, and Metacognitive Strategies on Students' Mathematics Performance

Predictor variables	Math Performance		
	B	$SE\ B$	β
Authoritarian parenting style	2.76	.11	.14**
Authoritative parenting style	6.67	.14	.20***
Permissive parenting style	-3.55	.11	-.19**
Mastery-avoidance goal orientation	.25	.77	.02
Mastery-approach goal orientation	.64	1.09	.03*
Performance-avoidance goal orientation	-.23	.61	-.02
Performance-approach goal orientation	1.71	.67	.14**
Self-Efficacy	-.06	.88	-.01
Metacognitive Strategies	-1.08	.55	-.11
R^2		.20	
F		8.32***	

*Notes. N = 312; *p < 0.05. **p < 0.01. *** p < .001.*

Mediation Effects

Two of the potential mediators were found to meet the criteria for mediation as outlined by Baron and Kenny (1986): mastery-approach and performance-approach goal orientations. Specifically, mastery-approach goal orientation mediated the relationship between the authoritative parenting style and math performance (see Figure 2). It was also found that the performance-approach goal orientation mediated the relationship between the authoritarian parenting style and math performance (see Figure 3).
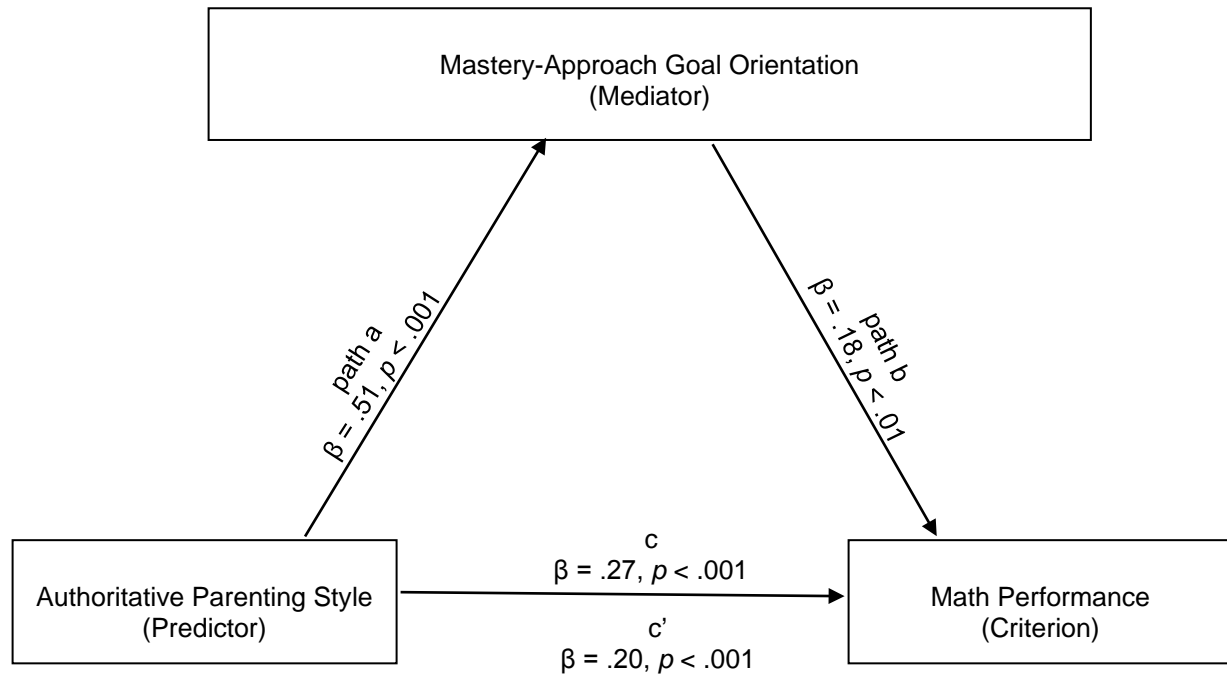
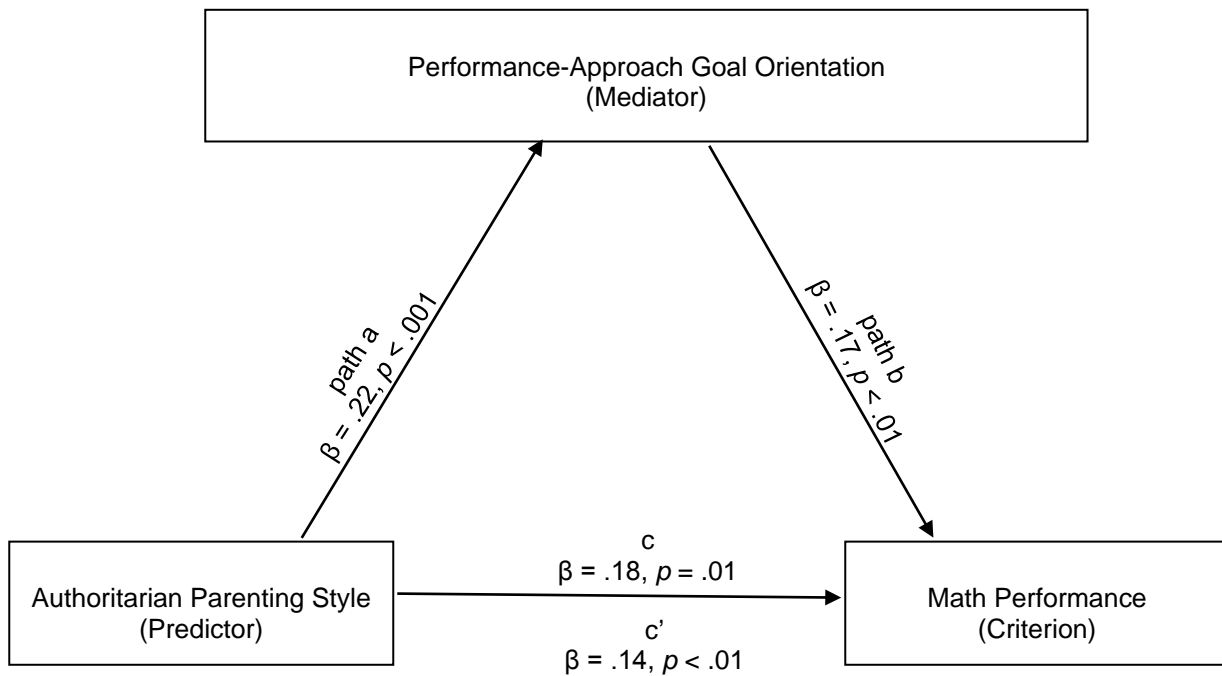*Figure 2*. Confirmed partial mediator: mastery-approach goal orientation

Figure 3. Confirmed partial mediator: performance-approach goal orientation

Moreover, since the effects of these two parenting styles were still significant when the mediators were added to the regression model and both the predictor variables and mediators significantly predicted math performance, it can be concluded that these findings support partial mediation for the authoritative and authoritarian parenting styles, respectively.

It was also determined that the remaining potential mediators of mastery-avoidance and performance-avoidance goal orientations, self-efficacy, and metacognitive strategies did not in fact mediate the relationship between parenting styles and math performance. There were several significant associations noted with parenting styles predicting these potential mediators and significant relationships between these potential mediators and math performance; however, when added to a regression model with the other mediators in the final step, no significant associations were found between these variables and the outcome variable (math performance). For this reason these variables did not meet the requirements to qualify as mediators in the current study.

Follow-up Testing

After confirming that a partial mediation existed, the analyses were followed up with Sobel tests in order to test the significance of the mediation effects (Sobel, 1982). Specifically, the mediation model was tested with an alternate statistical approach which evaluates whether the indirect effect of the predictor variables on the outcome variable via the mediator is significantly different from zero (Preacher & Hayes, 2004). This was a favorable method to utilize as the data for the outcome variables (math performance scores) were extracted from three different forms of math exams (Algebra I, Geometry or Algebra II).

Post hoc Sobel tests for mediation confirmed that the mastery-approach goal orientation in fact partially mediated the effect of the authoritative parenting style on math performance ($z = 3.75$, $p < .001$). Additionally, the performance-approach goal orientation partially mediated the effect of the authoritarian parenting style on math performance ($z = 2.61$, $p < .01$).

Chapter V

Discussion

The current study advances our understanding of the factors that influence Hispanic students' math performance in three ways. First, the findings provide insight into the relations between perceived maternal parenting styles and students' math performance. Additionally, the findings help us understand the influence maternal parenting styles have on self-regulated learning, namely, self-efficacy, goal orientation, and use of metacognitive strategies. Finally, the findings provide evidence regarding the mediating effects of mastery-approach and performance-approach goal orientations on the relationship between maternal parenting styles and math performance.

Maternal Parenting Styles as Predictors

Math performance. Overall, the findings suggest that maternal parenting styles are predictors of Hispanic students' math performance. Specifically, the stronger presence of a particular parenting style mothers are perceived to possess can be used to predict how well students score on math exams relative to their peers. This overarching finding confirms previous work which indicated that students' perceived maternal parenting style was significantly related to students' academic achievement (e.g. Hickman, et al., 2000; Steinberg, et al., 1992). The present study advances the work in this area of research by delving deeper into understanding maternal parenting styles as well as the motivational beliefs which can be used to predict math performance. Specifically, the current study looks at motivational beliefs as mediators between parenting styles and students' performance.

In the current study, students who saw their mothers as generally more authoritarian or authoritative were more likely to score higher on math exams relative to their peers. The effect was greater for the authoritative parenting style, indicating that those students who generally perceived their mothers as encouraging them to share their ideas and who explain the reasoning behind polices imposed, were more likely to do well on math exams. These findings are consistent with the general consensus in the parenting style literature which indicates that the authoritative parenting style is associated with more positive academic outcomes. Specifically, previous research has consistently revealed that students who perceive their parents as more authoritative tend to exhibit higher grades (Cohen & Rice, 1997; Dehyadegary et al., 2012; Paulson, 1994; Pong, et al., 2009; Simons & Conger, 2007). Additionally, this relationship was also confirmed in research pertaining to Hispanic students which also revealed a link between mothers who were seen as more authoritative positively predicting students' grades (Guilamo-Ramos, et al., 1997; Mital, 2011). Previous findings, however, did not look particularly at students' performance for one specific domain. The current findings address this limitation by examining perceived maternal parenting styles in regards to math performance specifically.

It was also found that those who saw their mothers as generally strict and dictating, did well in math compared to students raised by other parenting styles. On the one hand, these findings contradict previous research which revealed that the authoritarian parenting style was related to adolescents' low academic achievement (Roche et al., 2007; Williams, et al., 2012). On the other hand, although less common, these findings confirmed previous research which indicated that authoritarianism was

associated with positive academic achievement (Gonzalez et al., 2001; Mofid et al., 2012). The current findings also confirm previous research specific to Hispanic adolescents. Early work found that students who generally perceived their parents as utilizing an authoritarian style were more likely to be engaged academically and this positively predicted their grades (Torres-Villa, 1995). While previous research investigating the parenting practices of Hispanic parents has revealed significant associations between the authoritarian style and students' grades, it assessed the parenting styles of both parents whereas the current study examined the role of the mother as she generally has a more direct role in the upbringing of the children and issues related to their academics.

Conversely, it was found that permissive parenting was a negative predictor of math performance. That is, those students who perceived their mothers as generally uninvolved in their learning were found to have lower scores on math exams compared to their peers. This finding is also consistent with previous research which revealed that permissive parenting was related to low academic achievement (Cohen & Rice, 1997; Pittman & Chase-Lansdale, 2001; Roche, et al., 2007). Also, this finding can be supported by previous research which found that those who perceived their mothers as permissive tend to be less focused at improving themselves or overcoming challenges when completing their math work (Gonzalez & Wolters, 2006). In addition to contributions the current findings make to the literature, they also provide clarity to the nature of the relationship between maternal parenting styles and math performance and reinforce the need to understand the additional factors such as the motivational beliefs which may influence these relations in the Hispanic student population.

Goal orientations. The current research revealed that all three parenting styles can be used to predict the four goal orientations. Specifically, perceived maternal authoritarianism was a positive predictor of mastery-avoidance and performance-approach goal orientation. That is, students who reported having mothers who generally control their behavior with minimal verbal exchange and who strongly emphasize obedience are more likely to adopt a goal orientation which focuses on avoiding misunderstanding. This finding contradicts the study conducted by Gonzalez and colleagues (2001) which found that maternal authoritarian parenting was related to an increase in mastery-approach goal orientation in high school students. A possible explanation for the finding in the current study is that children who see their mothers as dictating how to they should approach their math work, may be afraid of disappointing her so they avoid work that they are unsure of or do not understand. This style has been previously associated with negative outcomes such as anxiety as well as less support and encouragement for learning (Baumrind, 1971; Baumrind et al., 2010). Therefore, it is plausible that the student is hesitant to take on goals of understanding and learning because they do not feel supported by their mothers. Another possible explanation is that students who perceive their mothers as more dictative and strict lack the guidance needed to take on goals for increasing their knowledge and understanding, consequently, they avoid challenging work.

Additionally, perceived maternal authoritarianism positively predicted performance-approach goal orientation or a goal orientation which focuses on outperforming others. In other words, those who reported that they perceive their mothers as generally strict and controlling, tended to report focusing on doing better than

their peers when doing their math work. These findings parallel previous research which also found that authoritarian parenting was a positive predictor of students' adoption of performance-approach goals (Gonzalez, et al., 2001; Gonzalez & Wolters, 2006). These previous findings; however, did not focus solely on Hispanic students. In the current study, it was found that mothers who utilize an authoritarian style are likely to tell their children that they must do well in school and associate doing well with getting good grades. It could be that, perhaps, students take what their mothers instruct them to do and focus on performing better than others in order to get better grades. The current study makes a contribution to the literature by focusing solely on Hispanic students in order to add to what is known regarding ethnic group differences in regards to utilizing parenting styles as a predictor of students' performance.

In the current study, it was also found that maternal authoritativeness positively predicted the mastery-approach goal orientation. In other words, those students who see their mothers as seeking to control their behavior with reasoning and explanation in a warm and democratic manner, were more likely to seek learning for the sake of learning. As a whole, these findings add to the notation that authoritative parenting is generally associated with more positive academic outcomes. Specifically, these findings are in line with previous findings which have also revealed that authoritative parenting is a predictor of mastery-approach goal orientation (Gonzalez & Wolters, 2006; Gonzalez et al., 2002; Mital, 2011). A likely explanation for this finding is that students who see their mothers as more democratic in setting expectations for their children, help increase the student's confidence by giving them input on these expectations; therefore, they are more likely to take on goals of increasing their understanding and learning as much as possible.

Another finding is that the permissive parenting style was a positive predictor of performance-avoidance goal orientation. This finding suggests that those students who generally see their mothers as laissez-faire in their parenting are more likely to report that they avoid taking on tasks which make them look incompetent compared to others. This finding confirms previous research which indicated that the permissive style is often associated with low persistence on challenging tasks (Park & Bauer, 2002). Thus, when faced with a challenging task they do not think they can master, they attempt it; however, they easily give up so that they do not look less intelligent than their peers. Interestingly, this style also negatively predicted a mastery-avoidance orientation. Specifically, students who reported that their mothers were more non-involved and dismissive, were less likely to take on goals of avoiding misunderstanding. Taken together these findings suggest that students who see their mothers as generally more dismissive and non-involved avoid math tasks that may make them look unintelligent, but they are less likely to take on goals of avoiding not understanding something. A possible explanation for this finding is that students with mothers who are generally uninvolved in their education, lack guidance and encouragement, therefore, they do not find it important to learn new information. This finding can be supported by past research which has found that permissive parenting is related to low academic achievement and low persistence on challenging tasks (Lee, Daniels, & Kissinger, 2006; Roche et al., 2007). Although performance-approach, performance-avoidance, and mastery-approach goal orientations have been extensively researched, less is known about the mastery-avoidance orientation. The findings from the current study add to our understanding of this construct in regards to Hispanic students' math performance.

In other research with a Hispanic population, the permissive parenting style was found to be related to higher self-esteem (Martinez & Garcia, 2008; Martinez et al., 2007). It could be that those students who see their mothers as generally uninvolved in their education seek to please her by only taking on tasks they are good at and avoid tasks which may make them look incompetent. By doing so, the students are able to maintain a higher self-efficacy and feel better about their performance which in turn influences their future behaviors and the goal orientations they adopt. Since the permissive style is characterized by the parent generally having a very minimal role in altering their child's behavior (Steinberg et al., 1992), the child's continues to do the minimum and not strive to reach their maximum potential in their learning.

Overall, significant findings were revealed between perceived maternal parenting styles and goal orientations. However, the correlational nature of these data prevent any causal conclusions about these relations. It may be, perhaps, that students are more likely to perceive their mothers in a way that is consistent with the goal orientations they have adopted towards learning math. Research assessing the parenting style as reported by the mothers directly would help to explicate the relationships between these constructs.

Self-efficacy. Current findings suggest that the authoritative style is a positive predictor of self-efficacy for math. Namely, students who perceived their mothers as encouraging them to share their ideas in a warm and democratic manner were more likely to believe that they are capable of doing well on math related work. This relationship can be expected because the child is given the opportunity to have an input in setting standards and expectations for their math work; therefore, they are likely to hold the belief that they are capable of meeting these standards and doing well in math related

work. These findings are in line with previous work with adolescents which has repeatedly found that students who perceived their parents as authoritative reported high self-efficacy beliefs (Boon, 2007; Hoang, 2008; Juang & Silbereisen, 2002).

Moreover, although not as large of an effect as with the authoritative style, the permissive parenting style was also found to be associated with a greater sense of self-efficacy for math compared to their peers. In line with this finding, previous work has revealed that adolescents whose parents utilize permissive styles tend to have higher self-confidence (Park & Bauer, 2002). Relatedly, researchers have found that Hispanic adolescents of permissive parenting was associated with higher scores on self-esteem measures than those with authoritative parents (Martinez & Garcia, 2008; Martinez et al., 2007). Although the constructs of self-confidence and self-esteem are not synonymous with self-efficacy, it can be argued that they are connected. According to the philosophy behind Bandura's Reciprocal Determinism, all determinants of motivation are functionally dependent, interacting and influencing one another (Bandura, 1997). Thus, a student who has high self-efficacy beliefs for math and is successful in most tasks he/she takes on, will also most likely build a high self-esteem and self-confidence, and vice-versa. Again, given the nature of the present data, it is premature to assume that this pattern of relations represents a causal chain. It could be that students' beliefs about their capability for math influences the parenting style their mother utilizes with them.

A somewhat surprising finding was that the authoritarian style did not significantly predict self-efficacy although it did positively significantly predict math performance. A plausible explanation is that students with generally directive mothers are told to do well in school and consequently do better than their peers. However, the

perceived parenting style of their mother did not predict how capable they felt for doing well on math related work.

Metacognitive strategies. Current findings suggest that authoritativeness and permissiveness were positive predictors of the utilization of metacognitive strategies with the former having a stronger effect. It is plausible that parents who generally set standards and expectations to shape their child's behavior in a rational and issue-oriented manner will suggest strategies for helping their child learn more successfully. These findings are consistent with inferences made by previous research which found that students with authoritative parents are more likely to utilize metacognitive strategies (Boveja, 1998; Erden & Uredi, 2008; Purdie et al., 2004) and exhibit higher levels of task-relevant behavior (Aunola et al., 2000). Additionally, those parents who utilize authoritative parenting practices may model metacognitive strategies in front of their children, which has been found to be associated with similar behaviors in children's own self-regulatory learning (Martinez-Pons, 1996). Previous research examining parenting styles as predictors of metacognitive strategies have generally been conducted internationally. The current study adds to the literature by examining only students in the United States and further makes a contribution by assessing the parenting styles of Hispanic students exclusively.

The finding that permissive parenting is a positive predictor of metacognitive strategy use has not been previously supported in the literature. This finding is somewhat contradictory to conclusions made in previous research which stated that permissive parenting is related to low academic achievement and low persistence on challenging tasks (Lee et al., 2006; Roche et al., 2007). It is expected that students who utilize

metacognitive strategies would be more successful academically. On the flip side, since the current study found that students who generally perceived their mothers as permissive generally reported high self-efficacy beliefs and this style also negatively predicted math performance compared to their peers, it could be that these students felt confident in their abilities to do well in math and utilized metacognitive strategies; however, for some reason they did not do well on math assessments such as language barriers, for example. Previous research regarding Hispanic students has revealed that factors related to lack of teacher preparation in multiculturalism is related to poor performance (Good et al., 2010). A possible explanation for these findings may be that the teacher is not aware of a cultural issue the student is experiencing which is poorly influencing their math performance regardless of how self-efficacious they feel about math or the strategies they utilize when completing their math work. Future research should examine the issue of teacher training in multiculturalism in order to thoroughly understand the environmental and cultural influences Hispanic students bring into the classroom.

The present study advances the work in this area by examining the use of metacognitive strategies for a particular domain (math) which most of the previous studies did not do. This will enable researchers to better understand self-regulated learning and the factors which may be associated with it.

Goal Orientations as Predictors

At a broad level, the findings examining the influences of the potential mediators as predictors provide further support for using goal orientations to understand the reasons students engage in academically related work and how these reasons are related to students' math performance. Specifically, the performance-approach and mastery-

approach goal orientations were found to almost equally positively predict math performance while taking into account the predictive effects of the parenting styles in the model. In other words, those students who reported a greater focus on doing their math work in order to outperform others, are more likely to do better on math tests. These findings support previous research which noted that performance-approach goals positively predicted students' grades (Elliot & McGregor, 1999; Wolters et al., 1996; Wolters, 2004). Relatedly, the notion that the mastery-approach goal orientation positively predicts math performance, has been revealed in previous work on this construct (Hoyert & O'Dell, 2009; Roebken, 2007; Keys et al., 2012). As expected, those students who report doing their math work for the sake of learning are more likely to do well on math tests compared to their peers. Additionally, the current findings make a contribution to the literature by utilizing a specific sample, Hispanic high school students, which previous research did not specifically address.

In the current study, an unexpected finding was that students' self-efficacy was not a significant predictor of their math performance. This is a major contrast to previous research which revealed that self-efficacy is related to many aspects of academic performance (Bandura,1997; Multon, Brown, & Lent, 1991; Schunk, 1981; Schunk & Miller, 2002). Authoritative and permissive styles were positive predictors or self-efficacy and significant relations were found between these parenting styles and performance; however, self-efficacy was not found to be a significant predictor of math performance. A possible explanation is that the sources of self-efficacy, namely, experience, vicarious experience, social persuasion, and physiological factors (Bandura, 1997), might be different for Hispanic students. That is, there are different factors that

influence Hispanic students' self-efficacy to a greater extent such as the influence of their families. Therefore, their rating of their perceived self-efficacy beliefs may not be an accurate measure of how self-efficacious they truly feel. Further examination need to be conducted related to measuring Hispanic students' self-efficacy towards math.

The nature of these data prevent any causal deductions about these associations. It may be, perhaps, that the students' math performance influences the goal orientations they adopt. This link has been explored by recent research (Magi et al., 2010). The results from the current study contributed to our understanding of the associations between performance-approach and mastery-approach and students' math performance; however, additional research in this area is certainly warranted. The relations these two goal orientations have as mediators between the initial predictor (maternal parenting styles) and the outcome (math performance) will explored in depth in the next section.

Mediation Effects

The present findings link students' perceptions of maternal parenting styles to math performance of Hispanic high school students and further suggest that two goal orientations connote a pathway through which maternal parenting style influences students' math performance. Specifically, the authoritative and authoritarian parenting styles positively predicted math performance relative to their peers and these relationships were mediated by mastery-approach and performance-approach goal orientations, respectively. As alluded to earlier, these findings support partial mediation since it was found that the effects of these two parenting styles were still significant when the mediators were added to the regression model. That is, both the mediators and the initial predictor variables significantly predicted math performance.

As previously discussed, the influence parenting styles have on students'
performance has been examined in the research literature; however, a deeper
understanding is gained when we comprehend the process which produces these
associations specifically for Hispanic students. Two crucial findings from this study
make valuable contributions to this assertion and will be the focus of the remaining
discussion in this section.

First, it was revealed that students who perceived their mothers as sharing the
reasoning behind the policies imposed in a warm and rational manner are more likely to
focus on doing well for the sake of learning, and in turn, this is associated with doing
well in math compared to their peers. This finding not only adds to what we already
know regarding these associations, but more importantly it helps researchers understand
the mediating factors that are linked to the academic performance of specifically Hispanic
students which previous research has yet to examine. Previous work has revealed that
Hispanic mothers tended to engage in high levels of praise and physical affection and
lower levels of harsh, inconsistent, and punitive behaviors (Calzada & Eyeberg, 2002).
These previous findings can be linked to findings from the current study which indicated
that Hispanic mothers were perceived as authoritative. Additionally, a plausible
explanation is that those students who generally perceived their mothers as authoritative
in her parenting and who explain the reasoning behind the standards and expectations in
regards to doing well in math, this increases students' self-confidence for math which in
turn influences the likelihood they will take on mastery-approach goals and ultimately the
student does well in their math class. The student measures success by intrapersonal
standards. Put simply, the student does well in math because they understand the

importance of doing well not merely because their mother told them to do well. Conversely, it may be that the degree of competence the student has towards math, influences the goal orientation they adopt and this influences the parenting style of his/her mother. Further research should consider additional factors which may also mediate the relationship between this parenting style and math performance. For example, since the current study revealed that the role of mothers at home is crucial to their child's academic performance, it can be concluded that their involvement at the school level can benefit their child as well. Subsequent research should, for example, look the associations between maternal involvement and perceived parenting style predicting students' performance for math.

Second, it was a found that students who generally perceive their mother as harsh, rigid, and controlling, are more likely to take on goals which seek to outperform others, and in turn, this is associated with doing well in math in comparison to their peers. This finding confirms what we already know regarding the relations of performance-approach goals positively predicting students' grades (Elliot & McGregor, 1999; Wolters et al., 1996; Wolters, 2004). However, with the exception of a limited number of studies, the finding that authoritarian parenting positively predicts students' performance has not been previously found. It could be that when examined independently, authoritarian parenting has a different impact on students' performance. In other words, it may be that when studied in relation to another variable, in this case performance-approach goal orientation, authoritarian parenting is a positive predictor of performance. It could be that students who perceive their mothers as more authoritarian seek her acceptance and to meet her high standards, therefore they become competitive and try to outperform their

classmates, which leads to them doing well in math. It is also plausible that in the Hispanic culture where a strong emphasis is on family values and the overall well-being of the family and family goals rather than on individual goals (Sommers et al., 1993), students desire to do well in order to ultimately benefit their families by obtaining a job, for example, and make them proud rather than for the sake of learning. Their standards of measuring success is relative to others or is based on interpersonal standards and external motivators. Thus, although students may perceive their mothers as rigid and directive which may make them feel anxious and withdrawn (Baumrind et al., 2010), they still do well in their math classes because they want to do better than their peers, not necessarily because they desire to master the material or understand the importance of doing well. It would be interesting to examine the long-term effects of these relations on students' academic performance specifically for Hispanic students.

Limitations

There are a number of limitations that should be considered when interpreting the present results. First, math performance was measured as a percentile rank from three different math exams. Rather than measuring students' relative ability in the different classes together, it would have been better to utilize scores from one class or conduct the analyses for the different classes separately. In order to do this, a larger sample size needs to be obtained in order to have a large enough sample for each of the three classes to accommodate the number of predictors in the model. Also, the sample for this study was comprised of only Hispanic secondary students in particular math classes. Additional research is needed in order to ascertain whether the current results generalize

to other grade levels, domains, and perhaps other populations, in order to make additional contributions to research in this area.

Another limitation of the present study is that due to the correlational data, causal conclusions cannot be made. The design of the study is that maternal parenting style predicts students' math performance while considering goal orientation, self-efficacy, and metacognitive strategies as potential mediators. The inverse of this could be plausible. Perhaps students' math performance predicts the mother's approach to parenting. Further research is needed to address this possibility.

A third limitation is that the current study only assessed students' perceptions of their mother's parenting styles, not the mother's direct parenting style. When measuring the construct implicitly through perceptions of the child, the child's perceptions or experiences of the parenting may be different than how the parent actually perceives parenting them. Previous research has revealed that children perceived their parents as more authoritarian and permissive than the parents perceived themselves to be (Smetana, 1995). Additionally, this study found that parents perceived themselves to be more authoritative than their children reported. The findings from this study indicate that children may not experience parenting in the same manner as their parents intended it to be. Perhaps children perceive parenting as more relevant to their well-being. Further information is needed directly from mothers in order to accurately determine the parenting style utilized in the student's upbringing.

A final important limitation for this study is the design of the study measured students' goal orientation; however, it did not consider the impact of the teachers and the classroom environment on the students' adoption of these goals. Early research in this

area has revealed that the goal orientations students adopt are influenced by the classroom context (Ames, 1992; Midgley, Anderman, & Hicks, 1995). Although not the focus of the current study, this notion of goal structures or the policies and procedures in place a classroom and the role teachers play, should be examined to more thoroughly understand the achievement motivation of students and the factors that influence their success in math.

Practical Implications

The findings of this study help shed light on the integral role mothers play in their children's academic success, specifically for math. Several implications can be gleaned from this research. Since it was revealed that the parenting practices of mothers had a significant impact on students' performance, a noteworthy implication is that schools should consider providing parents, especially mothers, with community resources and programs (e.g., parenting classes) which emphasize parenting methods that have been linked to higher academic outcomes. Ideally, the diverse parenting styles of a multicultural population should be considered when devising such programs.

Another practical implication is that teachers and guidance counselors should be cognizant of the various parenting practices and the cultural differences students bring into the school environment. When guiding students, school administrators, particularly counselors, should take into account the student's aspirations or plans after completion of high school as well as their personal goals and their family goals.

To conclude, this study advances our understanding of the predictors that influence the achievement outcomes of Hispanic students' performance in high school math. Our understanding of self-regulated learning and the components which mediate

the relationships between maternal parenting styles and students' math performance, were also a highlight of this study. Together, these findings imply that mothers can significantly impact the educational outcomes of their children.

References

Ames, C. (1984). Competitive, cooperative, and individualistic goal structures: A
cognitive-motivational analysis. In C. Ames & R. Ames (Eds.), *Research on
motivation in education* (Vol. 3, pp. 177-207). New York: Academic.

Ames, C. (1992). Achievement goals and classroom motivational climate. In J. Meece &
D. Schunk (Eds.), *Students' perceptions in the classroom* (pp. 327-348). Hillsdale,
NJ: Erlbaum.

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning
strategies and motivation processes. *Journal of Educational Psychology, 80,* 260-
267. dx.doi.org/10.1037//0022-0663.80.3.260.

Anastasi, A. & Urbina, S. (1997). *Psychological Testing* (Seventh ed.). Upper Saddle
River, NJ: Prentice Hall.

Anderman, E. & Wolters, C. (2006). Goals, values, and affect. In P. Alexander and P.
Winne (Eds.), *Handbook of Educational Psychology, 2nd Edition* (pp. 369-390).
Mahwah, NJ: Lawrence Erlbaum.

Ang, R. P. & Goh, D. (2006) Authoritarian parenting Style in Asian Societies: A Cluster
analytic Investigation. Contemporary Family Therapy. *An international Journal*,
28(1), 132 –151. doi: 10.1007/s10591-006-9699-y.

Attaway, N., & Hafer-Bry, B. (2004). Parenting style and Black adolescents' academic
achievement. *Journal of Black Psychology, 30*(2), 229-247.
doi:10.1177/0095798403260720.

Aud, S., & Hannes, G. (Eds.) (2011). The Condition of Education 2011 in Brief (NCES 2011-034). *U.S. Department of Education, National Center for Education Statistics (NCES).* Washington, DC: U.S. Government Printing Office.

Aud, S., Hussar, W., Johnson, F., Kena, G., & Roth, E. (Eds.) (2012). The Condition of Education in 2012 (NCES 2012-045). *U.S. Department of Education, National Center for Education Statistics (NCES).* Washington, DC: U.S. Government Printing Office.

Aunola, K., Stattin, H., & Nurmi, E. (2000). Parenting styles and adolescents' achievement strategies. *Journal of Adolescents, 23*(2), 205-22. doi: org/10.1006/jado.2000.0308.

Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of Clinical and Social Psychology, 4,* 359-373. doi:org/10.1521/jscp.1986.4.3.359.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, *28*(2), 117-148. doi.org/10.1207/s15326985ep2802_3.

Bandura, A. (1994*).* Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (pp. 71-81). New York: Academic Press.

Bandura, A. (1997). Self-efficacy. *Harvard Mental Health Letter, 13* (9), 4-7.

Barladi, A. & Enders, C. (2010). An introduction to modern missing data analyses. *Journal of School Psychology, 48*, 5-37. doi: dx.doi.org/10.1016/j.jsp.2009.10.001

Baron, R. & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.

doi: 10.1037//0022-3514.51.6.1173.

Baumrind, D. (1967). Child care practices anteceding three patterns of preschool

behavior. *Genetic Psychology Monographs, 75,* 43-88.

Baumrind, D. (1971). Current practices of parental authority. *Developmental*

Psychology Monograph, 4, 1-103. doi: 10.1037/h0030372.

Baumrind, D., Larzelere, R., & Owens, E. (2010). Effects of preschool parents' power

assertive patterns and practices on adolescent development. *Parenting: Science*

and Practice, 10, 157-201. doi: 10.1080/15295190903290790.

Baumrind, D., & Sorkhabi, N. (2009). Authority and Obedience. In R. Shweder, T.

Bidell, A. Dailey, S. Dixon, P. Miller & J. Modell (Eds.) *The Child: An*

Encyclopedic Companion (pp. 81-86).Â Chicago, IL: University of Chicago

Press.

Boekaerts, M. (1999). Motivated learning: The study of student situational transactional

units. *European Journal of Psychology of Education, 14*(4), 41–55.

doi: 10.1111/j.1464-0597.2005.00205.x.

Bong, M. & Clark, R. (1999). Comparison between self-concept and self-efficacy in

academic motivation research. *Educational Psychologist, 34*, 139-154.

10.1207/s15326985ep3403_1.

Bong, M. (1998). Tests of the internal/external frames of reference model with subject-

specific academic self-efficacy and frame-specific academic self-concepts.

Journal of Educational Psychology, 90, 102-110.

doi: 10.1037//0022-0663.90.1.102.

Bong, M. (2001). Between- and within-domain relations of academic motivation among middle and high school students: self-efficacy, task-value, and achievement goals. *Journal of Educational Psychology, 93*, 23-34. doi: 10.1037//0022-0663.93.1.23.

Bong, M., Cho, C., Ahn, H., & Kim, H. (2012). Comparison of self-beliefs for predicting student motivation and achievement. *Journal of Educational Research, 105*, 336-352. doi: 10.1080/00220671.2011.627401.

Boon, H. (2007). Low-and high-achieving Australian secondary school students: Their parenting, motivations and academic achievement. *Australian Psychologist, 42*(3), 212-225. doi: 10.1080/00050060701405584.

Bouffard-Bouchard, T. (1990). Influence of self-efficacy on performance in a cognitive task. *Journal of Social Psychology, 130*, 353-363. doi: 10.1080/00224545.1990.9924591.

Boveja, M. (1998). Parenting styles and adolescents' learning strategies in the urban community. *Journal of Multicultural Counseling and Development, 26*, 110-119. doi:10.1002/j.2161-1912.1998.tb00191.x.

Bradley, R. & Corwyn, R. (2003). Age and Ethnic Variations in Family Process Mediators of SES. In M.H. Bronstein and R.H. Bradley (Eds.), *Socioeconomic Status, Parenting, and Child Development.* (pp. 161-188). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Brown, A., Bransford, J., Ferrara, R., & Campione, J. (1983). Learning, remembering, and understanding. *In Handbook of child psychology* (77-166). New York: Wiley.

Buri, J.R. (1991). Parenting Authority Questionnaire. *Journal of Personality Assessment*, *57*, 110-119. doi:10.1207/s15327752jpa5701_13.

Burke, M. (2006). Familial influence on self-efficacy: Exploring the relationship between perceived parenting style, current social support, and self-efficacy beliefs in a sample of non-traditional college students. Unpublished Doctoral Dissertation, Capella University.

Butler, D. & Winne, P. (1995). Feedback and Self-Regulated Learning: A Theoretical Synthesis. *Review of Educational Research*, *65*(3), 245 -281. doi:10.3102/00346543065003245.

Calzada, E. & Eyberg, S. (2002). Self-reported parenting practices in Dominican and Puerto Rican mothers of young children. *Journal of Clinical Child and Adolescent Psychology, 31*(3), 354-363. doi: 10.1207/S15374424JCCP3103_07.

Cardona, P., Nicholson, B., & Fox, R. (2000). Parenting among Hispanic and Anglo-American mothers with young children. *Journal of Social Psychology, 140*, 357–365. doi: 10.1080/00224540009600476.

Cartier, S. C., Butler, D. L., & Bouchard, N. (2010). Teachers working together to foster self-regulated learning through reading by students in an elementary school located in a disadvantaged area. *Psychological Test and Assessment Modeling*, 52(4), 382-418. doi: 412010_20101218.

Chao, R. K. (1994). Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. *Child Development, 65*(4), 1111-1119. doi: 10.2307/1131308.

Cohen, D.A., & Rice, J. (1997). Parenting styles, adolescent substance abuse, and

   academic achievement. *Journal of Drug Education, 27* (2), 199-212.

   doi:10.1177/0143034302234002.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.).

   Hillsdale, NJ: Lawrence Earlbaum Associates.

Coleman, J.S. (1990*). Foundations of Social Theory*. Boston: Harvard Press.

Coplan, R., Hastings, P., Lagace-Seguin, D., & Moulton, C. (2002). Authoritative and

   authoritarian mothers' parenting goals, attributions, and emotions across different

   childrearing contexts. *Parenting: Science and Practice, 2,* 1-26.

   doi: 10.1207/S15327922PAR0201_1.

Corno, L. (1986). The metacognitive control components of self-regulated learning.

   Contemporary Educational Psychology, 11, 333-346.

   doi: 10.1016/0361-476X(86)90029-9.

Dehyadegary, E., Yaacob, S., Juhari, R. & Talib, M. (2012). Relationship between

   parenting style and academic achievement among Iranian adolescents in Sirjan.

   Asian Social Science, 8(1), 156-161. doi:10.5539/ass.v8n1p156

Dekovic, M., & Gerris, J. R. M. (1992). Parental reasoning complexity, social class, and

   childrearing behaviors. *Journal of Marriage and the Family, 54*, 675-685.

   doi:10.1037/0893-3200.10.4.422

Dignath, C., Buettner, G. & Langfeldt, H. (2008). How can primary school students learn

   self-regulated learning strategies most effectively? A meta-analysis on self-

   regulation training programs. *Educational Research Review, 3*, 101-129.

   doi.org/10.1016/j.edurev.2008.02.003.

Dornbusch, S. M., Ritter, P. L., Leiderman, P. H., Roberts, D. F., & Fraleigh, M. J. (1987). The relation of parenting styles to adolescent school performance. *Child Development, 58*, 1244-1257. doi: 10.1177/0272431691111004.

Durand, T. (2010). Latina mothers' cultural Beliefs about their children, parental roles, and education: Implications for effective and empowering home-School partnerships. *The Urban Review, 43*(2), 255-278. doi: 10.1007/s11256-010-0167.

Dusenbery, L., Epstein, G., Botvin, J., & Diaz, T. (1994). The relationship between language spoken and smoking among Hispanic-Latino youth in New York City. *Public Health, 109*(3), 421–427. doi: 10.1158/1055-9965.EPI-09-0450.

Dweck, C.S., & Leggett, E.L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95* (2), 256-273. doi: 10.1037/0033-295x.95.2.256.

Dynarski, M., Clarke, L., Cobb, B., Finn, J., Rumberger, R., & Smink, J. (2008). Dropout prevention: a practice guide. *National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences.* Washington, D.C: U.S. Department of Education.

Eccles, J. S., Wigfield, A., Midgley, C., Reuman, D., Iver, D., & Feldlaufer, H. (1993). Negative effects of traditional middle schools on students' motivation. *The Elementary School Journal, 93*(5), 553-574. doi:10.1086/461740.

Eccles, J.S. (2004). Schools, academic motivation, and stage environment fit. In R.M. Lerner & L. Steinberg (Eds.), Handbook of adolescent psychology (2nd ed., pp. 125–153). Hoboken, NJ, USA: Wiley.

Eccles, J., Wigfield, A., & Schiefele, U. (1998). Motivation to succeed. In W. Damon
(Series Ed.) & N. Eisenberg (Vol. Ed*.), Handbook of Child Psychology: Vol. 3*.
Social, emotional and personality development (5th ed., pp. 1017-1095). New
York: Wiley.

Elias, T. & Yee, H. (2009). Relationship between perceived paternal and maternal
parenting styles and student academic achievement in selected secondary schools.
European Journal of Social Sciences, 9(2). doi:10.1038/jid.2009.30.

Elliot, A. (1999). Approach and avoidance motivation and achievement
goals. *Educational Psychologist, 34,* 149-169. doi: 10.1207/s15326985ep3403_3.

Elliot, A. J. (2005). A conceptual history of the achievement goal construct. In A. J. Elliot
& C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 52-72). New
York: The Guilford Press.

Elliot, S., & Dweck, C.S. (1988). Goals: An approach to motivation and achievement.
Journal of Personality and Social Psychology, 54, 5-12. doi: 10.1037/0022-
3514.54.1.5.

Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals
and intrinsic motivation: A mediational analysis. *Journal of Personality and
Social Psychology, 70*, 461-475. doi: 10.1037//0022-3514.70.3.461.

Elliot, A., & McGregor, H. (2001). A 2 x 2 achievement goal framework. *Journal of
Personality and Social Psychology, 80*(3), 501-519. doi: 10.1037/0022-3514.80.

Elliot, A. & Murayama, K. (2008). On the measurement of achievement goals: Critique,
illustration, and application. *Journal of Educational Psychology, 100*(3), 613-
628. doi: 10.1037/0022-0663.100.3.613.

Erden, M., & Uredi, I. (2008). The effect of perceived parenting styles on self-regulated learning strategies and motivational beliefs. *International Journal about Parents in Education, 2*, 25-34. doi: 10.6092/isn:1973 – 3518.

Eum, K. & Rice,K. G.(2011). Test anxiety, perfectionism, goal orientation, and academic performance. *Anxiety, Stress & Coping: An International Journal, 24*,167-178. doi: 10.1037/a0024082.

Fall, A. & Roberts, G. (2012). High school dropouts: Interactions between social context, self-perceptions, school engagement, and student dropout. *Journal of Adolescents, 35*(4), 787-798. doi: 10.1207/s15326985ep3403_1.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist, 34*, 906 - 911. doi: 10.1007/s11409-006-6893-0.

Flavell, J. H. (1987) Speculation about the nature and development of metacognition. In F. Weinert & R. Kluwe (Eds.), *Metacognition, motivation, and understanding* (pp. 21 - 29). Hillsdale, NJ: Lawrence Erlbaum.

Garcia, T., & Pintrich, P. R. (1994). Regulating motivation and cognition in the classroom: The role of self-schemas and self-regulatory strategies. In D. H. Schunk, & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance: Issues and educational applications* (pp. 127-153). Hillsdale, NJ: Lawrence Erlbaum Associates.

Gauvain, M. & Perez, S. (2005). Parent-child participation in planning children's activities outside of school in European American and Latino families. *Child Development, 76,* 371-383. doi: 10.1111/j.1467-8624.2008.01156.x.

Gauvain, M., Perez, S., & Beebe, H. (2013). Authoritative parenting and parental support for children's cognitive development. In R.E. Larzelere, A.S. Morris, & Harrist, A.W. (Eds.), *Authoritative Parenting: Synthesizing Nurturance and Discipline for Optimal Child Development* (pp. 211-233). Washington, D.C.: American Psychological Association. doi: 10.1037-13948-010.

Glasgow K., Zimmerman, S., Troyer, L., Steinberg, L., Ritter, P. (1997). Parenting styles, adolescents' attributions, and educational outcomes in nine heterogeneous high schools. *Child Development, 68(*3), 507-29. doi: 10.2307/1131675.

Gonzales, N.A., Cauce, A.M., Friedman, R.J., & Mason, C.A. (1996). Family, peer, and neighborhood influences on academic achievement among African-American students. *American Journal of Community Psychology, 24* (3), 365-388. doi: 10.1177/0192513X07299617.

Gonzalez, A., Greenwood, G. & WenHsu, J. (2001). Undergraduate students' goal orientations and their relationship to perceived parenting styles. *College Student Journal, 35*(2), 182-193. doi: 10.1037/0021-9010.87.3.497.

Gonzalez, A.L. & Wolters, C. (2006). The relation between perceived parenting practices and achievement motivation in mathematics. *Journal of Research in Childhood Education, 21*(2), 203-217. doi: 10.1080/02568540609594589.

Gonzalez, A.R., Doan Holbein, M.F., & Quilter, S. (2002). High school students' goal orientations and their relationship to perceived parenting styles. *Contemporary Educational Psychology, 27* (3), 450-471. doi: 10.1016/j.lindif.2008.04.002.

Good, Masewicz, & Vogel (2010). Latino English language learners: Bridging

    achievement and cultural gaps between schools and families. *Journal of Latinos*

    and Education, 9(4), 321–339. doi 10.1080/19388070903229412.

Gottfried, A.E., Fleming, J.S., Gottfried, A.W. (2001). Continuity of academic intrinsic

    motivation from childhood through late Adolescence: A longitudinal Study.

    Journal of Educational Psychology, 93(1), 3-14. doi: 10.1037//0022-0663.93.13.

Guilamo-Ramos, V., Dittus, P., Jaccard, J., Johansson, M., Acosta, N., & Bouris, A.

    (2007). Parenting practices among Dominican and Puerto Rican mothers. *Social*

    Work, *52*, 17-30. doi:10.1093/sw/52.1.17.

Haberman, M. (1991). Pedagogy of poverty versus good teaching. *Phi Delta Kappan,*

    73, 290-94.

Harackiewicz, J. M., Barron, K. E., Carter, S. M., Lehto, A. T., & Elliot, A. J. (1997).

    Predictors and consequences of achievement goals in the college classroom: Main

    taining interest and making the grade. *Journal of Personality and Social*

    Psychology, 73, 1284-1295. doi: 10.1037/0022-3514.73.6.1284.

Harackiewicz, J.M., Barron, K.E., & Elliot, A.J. (1998). Rethinking achievement goals:

    When are they adaptive for college students and why? *Educational*

    Psychologist, 33(1), 1-22. doi:10.1177/0956797611435530.

Hattie, J., Biggs, J., & Purdie, N. (1996). Effects of Learning Skills Interventions on

    Student Learning: A Meta Analysis. *Review of Educational Research Summer,*

    66(2), 99-136. doi: 10.3102/00346543066002099.

Hickman, G.P., Bartholomae, S., & McKenry, P.C. (2000). Influence of parenting styles

    on the adjustment and academic achievement of traditional college freshmen.

Journal of College Student Development, 41, 41-54.
doi:10.1080/01443410701846119.

Hoang, T. N. (2008). The effect of grade level, gender, and ethnicity on attitude and learning environment in mathematics in high school. *International Electronic Journal of Mathematics Education, 2*, 47−59. doi: 1306-3030.

Hoyert, M. & O'Dell, C. (2009). Goal orientation and academic failure in traditional and nontraditional aged college students. *College Student Journal,* 43(4)*,* 1052-1061. doi: 55492482.

Horyna, B., & Bonds-Raacke, J. M. (2012). Differences in students´ motivation to attend college: large versus small high schools. *Education, 132*(4), pp. 708-724. doi: 10.2307/20159584.

Hoyert, M.S., & O'Dell, C.D. (2009). Goal Orientation in traditional and non-traditional aged college students. *College Student Journal, 43*, 1052-1061. doi: 10.1080/00986280902739693

Jacobs, J. & Eccles, J. (1992). The impact of mothers' gender-role stereotypic beliefs on mothers' and children's ability perceptions. *Journal of Educational Psychology, 63*, 932-944. doi: 10.1037//0022-3514.63.6.932.

Juang, L. & Silbereisen, R. (2002). The relationship between adolescent academic capability beliefs, parenting and school grades. *Journal of Adolescence, 25*, 3-18. doi: 10.1006/jado.2001.0445.

Kagan, D. M. (1990). How schools alienate students at risk: A model for examining proximal classroom variables. *Educational Psychology, 25*, 105-25.

Keys, T.D., Conley, A.M., Duncan, G. J., & Domina, T. (2012). The role of goal
orientations for adolescent mathematics achievement. *Contemporary Educational
Psychology, 37*, 47-54. doi: 10.1037/a0025508.

Kistner, S., Rakoczy, K., & Otto, B. (2010). Promotion of self-regulated learning in
classrooms: Investigating frequency, quality, and consequences for student
performance. *Metacognition and Learning, 5*(2), 157-171.

Kleitman, S. (2008). *Knowing thyself: self-confidence and self-monitoring aspects of
metacognition*. Published via the National Quality Schooling Framework.
Sydney, Australia.

Kleitman, S. & Gibson, J. (2011). Metacognitive beliefs, self-confidence and primary
learning environment of sixth grade students. *Learning and Individual
Differences*, *21*(6), 728-735. doi:10.1016/j.lindif.2011.08.003.

Komarraju, M. & Nadler, D. (2013). Self-efficacy and academic achievement: Why do
implicit beliefs, goals, and effort regulation matter? *Learning and Individual
Differences*, *25*, 67-72. doi:org10.1016/j.lindif.2013.01.005.

Kominski, R., Jamieson, A., & Martinez, G. (2001). At-Risk Conditions of U.S. School-
Age Children. *Population Division: U.S. Bureau of the Census*. Working Paper
Series No. 52. Washington, D.C.

Lamborn, S. D., & Felbab, A. J. (2003). Applying ethnic equivalence and cultural values
models to African-American teens' perceptions of parents. *Journal of
Adolescence, 26*, 605-622. doi:10.1016/S0140-1971(03)00059-9.

Lee, S.M., Daniels, M. H. & Kissinger, D. B. (2006). Parental Influences on Adolescent
Adjustment. Family Journal, 14(3), 253-259. doi:10.1177/1066480706287654

Linnenbrink, E.A.(2005). The dilemma of performance-approach goals: the use of

multiple goal contexts to promote students' motivation and learning. *Journal of*

Educational Psychology, 97(2), 197-213.

doi:10.1146/annurev.psych.53.100901.135153.

Linnenbrink, E.A., & Pintrich, P.R. (2002). Motivation as an enabler for academic

success. *School Psychology Review, 31*(3), 313-328.

doi: 10.1177/10534512060410040401.

Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family:

Parent–child interaction. In P. H. Mussen & E. M. Hetherington, *Handbook of*

child psychology: Vol. 4. Socialization, personality, and social development (4th

ed.). New York: Wiley.

Magi, K., Lerkkanen, M., Poikkeus, A., Rasku-Puttonen, H., & Kikas, E. (2010).

Relations between achievement goal orientations and math achievement in

primary grades: A follow-up study. *Scandinavian Journal of Educational*

Research, 54(3), 295-312. doi: 10.1037/0022-0663.97.2.197.

Mandara, J. (2006). The impact of family functioning on African American males'

academic achievement: A review and clarification of the empirical literature.

Teachers College Record, 108(2), 206-223.

doi:10.1111/j.1467-9620.2006.00648.x.

Martinez, E. (1988). Child behavior in Mexican American/Chicano families, maternal

teaching, and childrearing practices. *Family Relations, 37*, 275-280.

Martinez, I., & Garcia, J. (2008). Internalization of values and self-esteem among

Brazilian teenagers from authoritative, indulgent, authoritarian, and neglectful

homes. *Adolescence, 43*(169), 13-29.

Martinez, I., Garcia, J., & Yubero, S. (2007). Parenting styles and adolescents' self-esteem in Brazil. *Psychological Report, 100*(3), 731-45. doi:10.2466/pr0.100.3.731-745.

Martinez-Pons, M. (1996). Test of a Model of Parental Inducement of Academic Self-Regulation. *The Journal of Experimental Education, 64*(3): 213–227. doi:10.1080/00220973.1996.9943804.

McBride-Chang, C., & Chang, L. (1998). Adolescent-parent relations in Hong Kong: parenting styles, emotional autonomy, and school performance. *Journal of Genetic Psychology, 159*(4), 421-437. doi:10.1016/j.jecp.2010.12.003.

Meece, J.L., Blumenfeld, P.C., & Hoyle, R.H. (1988). Students' goal orientations and cognitive engagement in classroom activities. *Journal of Educational Psychology, 80,* 514-523. doi: 10.1037//0022-0663.80.4.514.

Menken, K. & Holmes, P. (2000). *Ensuring English language learners' success: Balancing teacher quantity with quality*. Washington, DC: NCBE.

Midgley, C., Anderman, E., & Hicks, L. (1995). Differences between elementary and middle school teachers and students: A goal theory approach. *Journal of Early Adolescence, 15*, 90-113. doi:10.1177/0272431695015001006.

Midgley, C., Maehr, M., Hruda, L., Anderman, E., Anderman, L., Freeman, K., Gheen, M., Kaplan, A., Kumar, R., Middleton, M., Nelson, J., Roeser, R., & Urdan, T. (2000). *Manual for the Patterns of Adaptive Learning Scales (PALS)*. Ann Arbor, MI: University of Michigan.

Milevsky, A., Schlechter, M., Netter, S., & Keehn, D. (2007) Maternal and Paternal
    Parenting Styles in Adolescents: Associations with Self-Esteem, Depression
    and Life-Satisfaction. *Journal of Child and Family Studies, 16*(1), 39-47.
    doi: 10.1007/s10826-006-9066-5.

Mills, N., Pajares, F., & Herron, C. (2007). Self-efficacy of college intermediate French
    students: Relation to Achievement and Motivation. *Language Learning, 57*(3),
    417-442. doi: 10.1111/j.1467-9922.2007.00421.x.

Mital, S. (2011). The impact of maternal parenting style on achievement goals, academic
    performance, and personal interest in school among high school students. *ETD
    Collection for Fordham University.* Paper AAI3454820.

Mofid, P., Azadfallah, P., & Tabatabai, K. (2012). Parenting style, personality
    characteristics and academic achievement in students. *Journal of
    Psychology, 16*(2), 106-120. doi:10.1111/j.1467-6494.2007.00462.x.

Mullis, R.L., Rathge, R. & Mullis, A.K. (2003). Predictors of academic performance
    during early adolescence: A contextual view. *International Journal of Behavioral
    Development, 27*(6), 541-548. doi:10.1080/01650250244000209.

Multon, K. D., Brown, S. D. and Lent, R. W. (1991) Relation of self-efficacy beliefs to
    academic outcomes: A meta-analytic investigation. *Journal of Counselling
    Psychology 38*, 30-38. doi: 10.1037//0022-0167.38.1.30.

Osborne, J. & Waters, E. (2002). Four assumptions of multiple regression that
    researchers should always test. *Practical Assessment, Research & Evaluation*,
    8(2). doi: 1531-7714.

Padron, Y. N., & Waxman, H. C. (1993). Teaching and learning risks associated with

limited cognitive mastery in science and mathematics for limited English

proficient students. In Office of Bilingual Education and Minority Languages

Affairs (Eds.). Washington, D.C.

Patterson, G. & Fisher, P. (2002). Recent developments in our understanding of

parenting: Bidirectional effects, causal models, and the search for parsimony. In

M.H. Bornstein (Series Ed.), *Handbook of parenting: Vol 5. Practical issues in

parenting* (2nd ed., pp. 59-88). Mahwah, NJ: Erlbaum.

Park, H., & Bauer, S. (2002). Parenting practices, ethnicity, socio-economic status and

academic achievement in adolescents. *School Psychology International, 23*(4),

386-396.

Paulson, S.E. (1994). Relations of parenting style and parental involvement with ninth-

grade students' achievement. *Journal of Early Adolescence, 14*, 250.

doi:10.1037/t06525-000

Pennequin, V., Sorel, O., Nanty, I., & Fontaine, R. (2010). Metacognition and low

achievement in mathematics: The effect of training in the use of metacognitive

skills to solve mathematical word problems. *Thinking and Reasoning, 16*(3),

198-220. doi:10.1080/13546783.2010.509052.

PEW Research Center (2012). Hispanic Student Enrollments

Reach New Highs in 2011 (August 20, 2012). Washington, D.C: Pew Hispanic

Research Center.

Pintrich, P.R. (1999). The role of motivation in promoting and sustaining self-regulated

learning. *International Journal of Educational Research, 31*, 459-470.

doi: 10.1016/S0883-0355(99)00015-4

Pintrich, P.R. (2000). Multiple goals, multiple pathways. The role of goal orientation in

    learning and achievement. *Journal of Educational Psychology, 92*(3), 544- 556.

    doi: 10.1037/0022-0663.94.3.638.

Pintrich, P.R. (2004). A conceptual framework for assessing motivation and self-

    regulated learning in college students. *Educational Psychology Review, 16*(4),

    385-407. doi: 10.1007/s10648-004-00006-x

Pintrich, P., Conley, A., & Kempler, T. (2003). Current issues in achievement goal

    theory and research. *International Journal of Educational Research, 39*, 319-337.

    doi: 10.1016/j.ijer.2004.06.002

Pintrich, P.R., & De Groot, E.V. (1990). Motivational and self-regulated learning

    components of classroom academic performance. *Journal of Educational*

    Psychology, 82, 33-40. doi: 10.1037/0022-0663.82.1.33

Pittman, L. D., & Chase-Lansdale, P. L. (2001). African-American adolescent girls in

    impoverished communities: Parenting style and adolescent outcomes. *Journal of*

    Research on Adolescence, 11, 199-224. doi:10.1111/1532-7795.00010

Pong, S., Johnston, J., & Chen, V. (2010). Authoritarian parenting and Asian adolescent

    school performance: Insights from the US and Taiwan. *International Journal of*

    Behavior Development, 34(1), 62-72. doi: 10.1177/0165025409345073

Preacher, K. & Hayes, A. (2004). SPSS and SAS procedures for estimating indirect

    effects in simple mediation models. *Behavior Research Methods, Instruments, &*

    Computers, *36*, 717-731. doi:10.3758/BF03206553

Purdie, N., Carroll, A., & Roche, L. (2004). Parenting and adolescent self-regulation.

    Journal of Adolescents, 27(6), 663-76. doi:10.1016/j.adolescence.2004.01.002.

Querido, J., Warner, T., & Eyberg, S. (2002). Parenting styles and child behavior in African American families of preschool children. *Journal of Clinical Child Psychology, 2*, 272-277. doi: 10.1207/153744202753604548.

Ryan, A., Shim, S., & Makara, K. (2013) Changes in Academic Adjustment and Relational Self-worth Across the Transition to Middle School. *Journal of Youth and Adolescence, 42*(9), 1372-1384. doi: 10.1007/s10964-013-9984-7.

Raffaelli, M. & Green, S. (2003). Parent-adolescent communication about sex: Retrospective reports by Latino College students. *Faculty Publications, Department of Psychology*. Paper 83.

Rivers, J. (2006). The relationship between parenting style and academic achievement and the mediating influences of motivation, goal orientation and academic self-Efficacy. *Electronic Theses, Treatises and Dissertations*. Paper 1875.

Roche, K. M., Ensminger, M. E., & Cherlin, A. (2007). Variations in parenting and adolescent outcomes among African American and Latino families living in low-income, urban areas. *Journal of Family Issues, 28*, 882 - 909. doi: 10.1037/a0016554.

Rodriguez, S. (1995). *Hispanics in the United States: An insight into group characteristics*. Department of Health and Human Services.

Roebken, H. (2007). *Multiple goals, satisfaction, and achievement in university undergraduate education: A student experience in the research university (SERU) project*. UC Berkeley: Center for Studies in Higher Education. Retrieved from: http://escholarship.org/uc/item/6k54d73t.

Ryan, C. S., Casas, J. F., Kelly-Vance, L., Ryalls, B. O., & Nero, C. (2010). Parent

involvement and views of school success: The role of parents' Latino and white American cultural orientations. *Psychology in the Schools, 47*(4), 391-405. doi: 10.1002/pits.20477.

Schunk, D. H. (1981). Modeling and attributional effects on children's achievement: A self-efficacy analysis. *Journal of Educational Psychology, 73,* 93-105. doi: 10.1037//0022-0663.73.1.93

Schunk, D.H. (1991). Self-efficacy and motivation. *Educational Psychologist, 26*, 207-232. doi: 10.1007/BF03172993.

Schunk, D. H., & Miller, S. D. (2002). Self-efficacy and adolescents' motivation. In F. Pajares & T. Urdan (Eds.), *Academic motivation of adolescents* (pp. 29-52). Greenwich, CT: Information Age.

Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 15-31). San Diego: Academic Press.

Short, D., & Echevarria, J. (2004). Teacher skills to support English language learners. *Educational Leadership, 62*(4), 8–13. doi: 0013-1784.

Sideridis, G.D. (2003). On the origins of helpless behavior of students with learning disabilities: avoidance motivation? *International Journal of Educational Research, 39*, 497-518. doi: 10.1016/j.jml.2003.08.

Simons, L. G., & Conger, R. D. (2007). Linking mother-father differences in parenting to a typology of family parenting styles and adolescent outcomes. *Journal of Family Issues, 28*(2), 212-241. doi: 10.1177/0192513X07311222.

Smalls, C. (2009). African American adolescent engagement in the classroom and

    beyond: The roles of mother's racial socialization and democratic-involved

    parenting. *Journal of Youth and Adolescence, 38*(2), 204-213.

    doi:10.1080/15298860802505384.

Smetana (1995). Parenting Styles and Conceptions of Parental Authority during

    Adolescence. Child Development, *66*(2), 299-316. doi: 10.1111/j.1467-

    8624.1995.tb00872.x.

Sobel, M. (1982). Asymptotic intervals for indirect effects in structural equations

    models. In S. Leinhart (Ed.), *Sociological methodology 1982* (pp. 290-312). San

    Francisco: Jossey-Bass.

Sommers, I., Baskin, D., & Fagan, J. (1993). Socio-cultural influences on the explanation

    of delinquency for Puerto Rican youths. *Hispanic Journal of Behavioral*

    Sciences, 15, 36-62. Doi: 10.1007/s10935-009-0173-0.

Sorkhabi, N. (2005). Applicability of Baumrind's parent typology to collective cultures:

    Analysis of cultural explanations of parent socialization effects. *International*

    Journal of Behavioral Development, 29, 552-563.

    doi:10.1080/01650250500172640.

Sorkhabi, N. & Mandara, J. (2013). Are the effects of Baumrind's parenting styles

    culturally specific or culturally equivalent? In R.E. Larzelere, A.S. Morris, &

    Harrist, A.W. (Eds.), *Authoritative Parenting: Synthesizing Nurturance and*

    Discipline for Optimal Child Development (pp. 113-135). Washington, D.C.:

    American Psychological Association. doi: 10.1037-13948-006.

Spoerer, N., & Brunstein, J. C. (2006). Assessment of self- regulated earning by self-reports: An overview of the current research. *German Journal of Educational Psychology, 20*(3), 147-160.doi:10.1024/1010-0652.20.3.147

Steinberg, L. (1994). The uses of out of school time. In H. Walberg and L. Anderson (Eds.), *Timepiece: Extending and Enhancing Learning Time*. (pp. 35-40). Washington, D.C.: National Association of Secondary School Principals.

Steinberg, L. (2001). We know some things: Parent-adolescent relationships in retrospect and prospect. *Journal of Research on Adolescence, 11*, 1-19. doi:10.1111/1532-7795.00001.

Steinberg, L., Dornbusch, S.M., & Brown, B.B. (1992a). Ethnic differences in adolescent achievement: An ecological perspective. *American Psychologist, 47*(6), 723-729. doi:10.1037//0003-066X.47.6.723.

Steinberg, L., Lamborn, S., Darling, N., Mounts, N., & Dornbusch, S. (1994). Over-Time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 65*, 754-770. doi:10.2307/1131416.

Steinberg, L., Lamborn, S.D., Dornbusch, S.M., & Darling, N. (1992b). Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed. *Child Development, 63*, 1266-1281. doi: 10.2307/1126611.

Tam, V. C., & Lam, R. S. (2003). Parenting style of Chinese fathers in Hong Kong: Correlates with children's school-related performance. *International Journal of Adolescent Medicine and Health, 15*(1), 51-62. doi: 0.1037/a00216961.

Taylor, L., Hinton, I., & Wilson, M. (1995). Parental influence on academic performance
in African-American students. *Journal of Child and Family Studies, 4*(3),
293-302. doi:10.1007/BF02233964.

Torres-Villa, M. (1995). Parenting styles, language and parents' education as predictors
of school achievement for Hispanic students. Unpublished doctoral dissertation,
Georgia State University, Atlanta.

Tuominen-Soini, H., Salmela-Aro, K. & Niemivirta, M. (2012). Achievement goal
orientations and academic well-being across the transition to upper secondary
education. *Learning and Individual Differences. 22* (3), 290-305, 16.
doi:10.1016/j.learninstruc.2007.05.003.

United States Census Bureau (2012). USA Statistics in Brief--Race and Hispanic Origin
(2000 Census Report). U.S. Census Bureau, Administration and Customer
Services Division. Washington, D.C.

Urdan, T. (2004). Predictors of academic self-handicapping and achievement: Examining
achievement goals, classroom goal structures, and culture. *Journal of Educational
Psychology, 96*(2), 251-264. doi: 10.1037/0022-0663.96.2.251.

Villalobos, J. A., Cruz, A. V., & Sanchez, P. R. (2004). Parental styles and
psychosocial development in high school students. *Review of Mexican
Psychology, 21*, 119-129.

Waxman, H. C., Huang, S. L., & Padrón, Y. N. (1995). Investigating the pedagogy of
poverty in inner-city middle level schools. *Research in Middle Level Education,
18*, 1-22. doi: 10.1017/CBO9780511616419.00.

Weinstein, C. (1994). Strategic learning/strategic teaching: Flip sides of a coin. In P.R. Pintrich, D. R. Brown, & C. E. Weinstein (Eds.), *Student, motivation, cognition, and learning* (pp. 257-273). Hillsdale NJ: Erlbaum.

Whaley, A., & Noel, L. (2012). Cultural compatibility theories of academic achievement among African American youth: A review and synthesis. J*ournal of Negro Education, 81*(1), 25-38. doi:10.1007/s11218-010-9142-y.

Williams, K., Ciarrochi, J., & Heaven, P. (2012). Inflexible Parents, Inflexible Kids: A 6-Year Longitudinal Study of Parenting Style and the Development of Psychological Flexibility in Adolescents. *Journal of Youth Adolescence*, *41*(8), 1053-66. doi: 10.1007/s10964-012-9744-0

Winne, P. (1995). Self-regulation is ubiquitous but its forms vary with knowledge. *Educational Psychologist, 30*(4), 223–228. doi:10.1207/s15326985ep3004_9.ool.

Wolters, C. (1998). Self-regulated learning and college students' regulation of motivation. *Journal of Educational Psychology, 90*, 224-235. Doi: 10.1037//0022-0663.90.2.224

Wolters, C. (1999). The relation between high students' motivational regulation and their use of learning strategies, effort, and classroom performance. *Learning & Individual Differences, 11*(3), 281. doi: 10.1016/S1041-6080(99)80004-1.

Wolters, C. (2003). Regulation of motivation: Evaluating an underemphasized aspect of self-regulated learning. *Educational Psychologist, 38,* 189-205. doi: 10.1207/S15326985EP3804_1.

Wolters, C. (2004). Advancing achievement goal theory: Using goal structure and goal orientation to predict students' motivation, cognition, and achievement. *Journal of Educational Psychology, 96*, 236-250. doi:10.1037/0022-0663.96.2.236.

Wolters, C., Yu, S., & Pintrich, P. (1996). The relation between goal orientation and students' motivational beliefs and self-regulated learning. *Learning and Individual Differences, 8*, 211-238. doi: 10.1037/0022-0663.96.2.236.

Zimmerman, B. (1990). Self-regulated learning and academic achievement: An overview. *Educational Psychologist, 25*, 3-17. doi:10.1207/s15326985ep2501_2.

Zimmerman, B. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13-39). New York: Academic Press.

Zimmerman, B. (2001). Theories of self-regulated learning and academic achievement: An overview and analysis. In B.J. Zimmerman & D.H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (2nd ed., pp. 1-37). Mahwah, NJ: Erlbaum.

Zimmerman, B. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice, 41*(2), 64-70. doi: 10.1207/s15430421tip4102_2.

Zimmerman, B. & Clearly (2006). Adolescents' development of personal agency. The role of self-efficacy beliefs and self-regulatory skill. In T. Urdan & F. Pajares (Eds.), *Self-Efficacy Beliefs of Adolescents* (pp. 45–69). Charlotte, NC: Information Age Publishing.

Zimmerman, B. & Martinez-Pons, M. (1986). Development of a structured interview for assessing students' use of self-regulated learning strategies. *American Educational Research Journal, 23,* 614-628. doi:10.3102/00028312023004614

Zimmerman, B. & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. *Journal of Educational Psychology, 80*, 284-290. doi:10.1037//0022-0663.80.3.284

Zimmerman, B. & Schunk, D. (2011) *Handbook of Self-Regulation of Learning and Performance*. New York, NY: Routledge.

Appendix A

Parental Authority Questionnaire

Parental Authority Questionnaire
(Buri, 1991)

Instructions: For each of the following statements, circle the number of the 5-point scale (1) "Strongly Disagree" to (5) "Strongly Agree." that best describes how that statement applies to you and your *mother*. Try to read and think about each statement as it applies to you and your *mother* currently and during your years of growing up at home. There are no right or wrong answers, so don't spend a lot of time on any one item. Be sure not to omit any items.

1. My mother feels that in a well-run home the children should have their way in the family as often as the parents do.

2. Even if her children don't agree with her, my mother feels that it is for our own good if we are forced to conform to what she thinks is right.

3. Whenever my mother tells me to do something, she expects me to do it immediately without asking any questions.

4. Once family policy has been established, my mother discusses the reasoning behind the policy with the children in the family.

5. My mother always encourages verbal give-and-take whenever I feel that family rules and restrictions were unreasonable.

6. My mother feels that what children need is to be free to make up their own mind and to do what they want to do, even if this does not agree with what she wants.

7. My mother does not allow me to question any decision she makes.

8. My mother directs the activities and decisions of the children in the family through reasoning and discipline.

9. My mother feels that more force should be used by her in order to get her children to behave the way they are supposed to.

10. My mother does not feel that I need to obey rules and regulations of behavior simply because someone in authority has established them.

11. I know what my mother expects of me in my family, but I also feel free to discuss those expectations with her when I feel that they were unreasonable.

12. My mother feels that a wise mother should teach her children early just who is boss in the family.

13. My mother seldom gives me expectations and guidelines for my behavior.

14. Most of the time my mother does what the children in the family want when making family decisions.

15. My mother consistently gives the children in my family direction and guidance in rational and objective ways.

16. My mother gets very upset if I try to disagree with her.

17. My mother feels that most problems in society would be solved if parents would not restrict their children's activities, decisions, and desires as they are growing up.

18. My mother lets me know what behavior she expects of me, and if I don't meet those expectations, she punishes me.

19. My mother allows me to decide most things for myself without a lot of direction from her.

20. My mother takes the children's opinions into consideration when making family decisions but she does not decide something simply because the children want it.

21. My mother does not view herself as responsible for directing and guiding my behavior.

22. My mother has clear standards of behavior for the children in our home, but she is willing to adjust those standards to the needs of each of the individual children in the family.

23. My mother gives me direction for my behavior and activities and she expects me to follow her direction, but she is always willing to listen to my concerns and to discuss that direction with me.

24. My mother allows me to form my own point of view on family matters and she generally allows me to decide for myself what I am going to do.

25. My mother feels that most problems in society would be solved if we could get parents to strictly and forcibly deal with their children when they don't do what they are supposed to as they are growing up.

26. My mother often tells me exactly what she wants me to do and how she expects me to do it.

27. My mother gives me clear direction for my behaviors and activities, but she is also understanding when I disagree with her.

28. My mother does not direct the behaviors, activities, and desires of the children in the family.

29. I know what my mother expects of me in the family and she insists that I conform to those expectations simply out of respect for her authority.

30. If my mother makes a decision in the family that hurt me, she is willing to discuss that decision with me and to admit it if she makes a mistake.

Appendix B

Achievement Goal Questionnaire-Revised

Achievement Goal Questionnaire-Revised (AGQ-R)
(Elliot & Murayama, 2008)

Instructions: Consider your goals for this *math course*; that is, what are trying to accomplish during this course. Indicate how strongly you agree or disagree with each of the 12 statements listed below, using the following 5-point scale:

1= Strongly Disagree
2=Disagree
3=Neither agree nor disagree
4=Agree
5=Strongly Agree

_____My aim is to completely master the material presented in my class.

_____ I am striving to do well compared to other students in my class.

_____ My goal is to learn as much as possible.

_____ My aim is to perform well relative to other students.

_____ My aim is to avoid learning less than I possibly could.

_____ My goal is to avoid performing poorly compared to others.

_____ I am striving to understand the content as thoroughly as possible.

_____ My goal is to perform better than the other students.

_____ My goal is to avoid learning less than it is possible to learn.

_____ I am striving to avoid performing worse than others.

_____ I am striving to avoid an incomplete understanding of the course material.

_____ My aim is to avoid doing worse than other students.

Appendix C

Patterns of Adaptive Learning Scales

Academic Efficacy

Patterns of Adaptive Learning Scales (PALS)
Academic-Related Perceptions, Beliefs, and Strategies
Academic Efficacy

(Midgley, Maehr, Hruda, Anderman, E., Anderman, L., Freeman, Gheen, Kaplan,
Kumar, Middleton, Nelson, Roeser, & Urdan, 2000).

Instructions: Here are some questions about yourself as a student in your *math class*.
Please circle the number that best describes what you think using the 5 point scale below.

1	3	5
Not at all true	Somewhat true	Very true

_____ I'm certain I can master the skills taught in class this year.

_____ I'm certain I can figure out how to do the most difficult class work.

_____ I can do almost all the work in class if I don't give up.

_____ Even if the work is hard, I can learn it.

_____ I can do even the hardest work in this class if I try.

Appendix D

Items Used to Assess Metacognitive Strategy Use

Items Used to Assess Metacognitive Strategy Use
(Wolters, 2004)

Instructions: The following questions ask about your learning strategies and study skills for this class. Again, there are no right or wrong answers. Answer the questions about how you study in your *math class* as accurately as possible.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Strongly
disagree

Strongly
agree

1. Before starting a math assignment, I try to figure out the best way to do it.

2. Before I begin to study for math, I think about what I want to get done.

3. In math, I start my assignments without really planning out what I want to get done. (R)

4. For math assignments, I double check my work to make sure I am doing it right.

5. When I'm working on my math I stop once in a while and go over what I have been doing.

6. In math, I keep track of how much I understand the work, not just if I am getting the right answers.

7. I try to change the way I study for math to fit the type of material I am trying to learn.

8. I try to adapt how I do my math assignments to fit with what the teacher wants or expects.

9. If what I am working on for math is difficult to understand, I change the way I learn the material.

Appendix E

Demographic Information

Demographic Information

1. What is your district student identification number? ☐ ☐ ☐ ☐ ☐ ☐
2. Who is your homeroom teacher? _____
3. Gender (*circle one*)   Male   Female
4. Birth Month _____   Birth year _____
5. Class Level (*circle one*)

    Freshman   Sophomore   Junior   Senior

6. Please circle the math course you are currently enrolled in:

    Algebra I

    Geometry

    Algebra II

7. Racial Background (*circle all the apply*)

    African American   Hispanic   Asian   Caucasian   Other

8. Do you currently have a maternal figure in your household (i.e. mother, step-mother, etc.)?

    (*circle* one)   Yes   No

9. Including yourself, how many people live in your household? _____

10. What year will you graduate from high school? (*circle one*)

    2013   2014   2015   2016   Other _____

11. How many courses are you taking this term? _____

12. How many hours per week do you work for pay? _____

13. How many hours per week do you study for this course? _____

14. What are your plans after graduating high school? (*circle one*)

    Attend 4-year University

    Attend Community College (obtain associate degree)

    Attend Vocational/ Trade school

    Join Military

    Work only (will not pursue any further education)