RHIZOMATOUS MOTIVATIONAL ASPECTS OF HISPANIC/LATINO STUDENTS IN REGULAR HIGH SCHOOL PROGRAMS

A Dissertation

by

ELSA CANTÚ RUIZ

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2006

Major Subject: Curriculum and Instruction

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Chair of Committee, Robert Capraro
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ABSTRACT

Rhizomatous Motivational Aspects of Hispanic/Latino Students

in Regular High School Programs. (December 2006).

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As mathematics teachers gain knowledge of what factors students perceive as motivating, they will be able to create a classroom environment that better increases motivation. Thus, the information gathered from this study will be useful and meaningful to teachers of mathematics and to leaders of mathematics departments in providing appropriate assistance and guidance to teachers in their quest for finding strategies that persuade students of mathematics to become life-long learners.

The primary purpose of this study was to examine the nature of any significant differences in perceptions of motivation of high school students' enrolled in Algebra I and their teacher's insights of what students perceive as motivating factors. In addition, the significant difference in perception of motivation between females and males in these same classes was also examined.

Nine teachers teaching Algebra I during the 2006 spring semester in a predominately Hispanic/Latino school district in a border town in south Texas participated. The participants, the aforementioned teachers and one hundred sixteen of their students, responded to the motivation section of the Motivated Strategies for

Learning Questionnaire (MSLQ) developed by Pintrich, Smith, Garcia and McKeachie at the University of Michigan (1991).

Data collected were analyzed and reported using confidence intervals, descriptive statistics and frequency data tables. Major research findings of this study show that high school Algebra I students' perceptions of motivation in three subscales of the motivation section of the MSLQ (Intrinsic Goal Orientation, Task Value and Self Efficacy) are significantly different from their teachers' insights of what motivates students in an Algebra I class. Results were examined to find the differences between students' motivational beliefs and their teachers' perceptions of motivating factors. In general, results indicate that teachers' perceptions and students' own beliefs of motivation do not coincide.

DEDICATION

This study is dedicated to the memory of my father, Florentino Cantú, Sr., who days before he went to heaven said, “No dejes el doctorado.” I know *que en el cielo estas* but I miss you, Papi.

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As I complete my doctoral studies and I get closer to receiving my degree it's only appropriate to acknowledge family and friends that have in many ways helped me get to this point.

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My family is very special. I wish to acknowledge all for their roles in my life. My parents, Florentino and Virginia Cantú, for instilling in me and in all their children,

the value of a good education. My sisters and brothers for always cheering me on. A special thanks to my sister, Norma, for being my “abrecaminos” and for understanding.

A special note of appreciation to Nono, my son, and Klariza, my daughter, for understanding the fact that I am a student at heart, and I was always studying and sometimes did not have time to be with them. To Stephanie and Josey, my daughter and son-in-law, thanks for loving my children. To my loving grandsons, Justice and Destin, and my darling granddaughter, Alexa, know that I love you very much and I did all this because I want you to know that you can too.

Last, but certainly not least, I would like to express my most sincere appreciation and love to my husband, Hilario, who has been my greatest supporter and partner. Much of what I have accomplished is because he is such a supportive partner. He encourages me, believes in me, and helps me, but most importantly, he gives me the freedom that I need to pursue my dreams.

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CHAPTER I

INTRODUCTION

Background of the Study

Students in the United States have continually been plagued with low scores on standardized tests when compared with students from other countries, especially in the area of mathematics (Stigler & Perry, 1988; National Research Council, 2001). For example, performance of U.S. first and fifth graders was found to be consistently inferior to that of Chinese children on both problems requiring computation and application of knowledge about mathematics (Stevenson, Shin-ying, Chuanan, Lummis, Stigler, Fan, & Ge, 1990). However, mathematics performance has been slowly improving. For instance, the average mathematics scores were slightly higher in 2005 than in all the previous National Assessment of Educational Progress (NAEP) assessment years for both fourth and eighth graders (Perie, Grigg, and Dion, 2005). “We are making progress on our math performance. The country’s two major college admissions exams, the Scholastic Aptitude Test (SAT) and the American College Testing (ACT), have now reported improved math performance for Texas students,” said Commissioner of Education Shirley J. Neeley (News Texas Education Agency, 2006, p. 1).

The progress is encouraging, but racial gaps still exist. For all children to have a

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The style and format for this dissertation follow that of *Journal for Research in Mathematics Education.*

chance for a successful future these gaps must be closed. Many minority students fall short in reaching the proficiency level in mathematics. For example, “the proportion of Hispanics reaching proficiency level rose from 7 to 16 percent. But among white fourth graders 43 percent now reach the proficient level; among Asians it's 48 percent” (Stevens, 2003, p. 4). America has a challenge…to ensure that schools produce students with the “math superiority required for global economic leadership and homeland security” (U. S. Department of Education, 2004, p. 1) necessary in today’s society. Thus, there is a need to find means to improve the mathematical proficiency of all U. S. students, so that they may become more proficient in their ability to analyze and reason mathematically.

An even more important reason for improving students’ mathematical understanding is that being proficient in mathematics is comparable to being able to fully participate in society (National Research Council, 2001). According to Stevenson, et al. (1990), the poor performance of U.S. students appears to be attributed to a variety of factors; among them is low motivation of students. Consequently, it seems especially important to investigate the factors that help improve the low motivation of students, particularly among students of mathematics and, most importantly, because “by 2010, Latinos will be the largest minority group in the United States, surpassing African Americans." (Slavin & Calderón, 2001, p. viii).

Students come to school with differing levels of motivation to learn and not all students will be motivated in the same ways at the same time (Kohn, 1994). Some have high levels and others have very low levels of motivation. In fact, every student has

his/her own innate individual level of motivation. Furthermore, students have their own special and exclusive way of understanding or interpreting their personal motivational drive. Students' individual motivation is deeply rooted and is often shaped as a result of earlier life experiences both positive and negative, the environment, attitudes and beliefs (Lumsden, 1994). Their motivation is similar to a rhizome given that both motivation and rhizomes are deeply rooted and external forces (life experiences or water reserves) shape both.

Student motivation plays an important role in determining what is learned and when learning takes place. In fact, teachers' perceptions of what students believe are motivating factors and what students actually say are motivating factors must be congruent in order for effective learning and teaching to occur (Litchfield, Newman, & Wright, 1998).

A lofty goal of education is to develop intrinsically motivated, curious, life-long learners—learners who enjoy learning, and who continue their quest for knowledge even after graduating from high school. Hence, it is imperative that teachers of mathematics become familiar with what motivates students and how to enhance the motivational level of all their students. Thus, it is important to examine the motivation of high school mathematics students--specifically, to investigate the difference between what students say motivates them in mathematics and what their teachers perceive to be motivating influences for students. Exploring the relationship of mathematics achievement of students whose perception of motivation more closely relates to their teacher's perception of what motivates students in a mathematics class is also important.

Statement of the Problem

Low scores on standardized mathematics tests are prevalent in our country. This seems to be true when examining scores of high school mathematics students in predominately Hispanic communities in South Texas (Texas Education Agency, Academic Excellence Indicator System Report, 2004-05). Thus, it is important to examine the rhizomatic nature of motivation of Hispanic high school mathematics students.

Henderson and Landesman (1992) affirm the generalization among educators that “children of Hispanic descent experience early and repeated failure in school, which results in poor academic self-concept, negative attitudes toward school subjects, and alienation from school” (Attitudinal and Motivational Dimensions, para. 1). They refer to reports that suggest that attitudes of Hispanic parents toward mathematics and their perception of mathematics as a negative image directly impact the low motivation of their children. In addition, MacCorquodale (1988) argues that girls, in particular Hispanic girls, may be discouraged from pursuing mathematics

It is noted here that in this study participants are Hispanic and mainly from middle to low socio-economic environments. Also in this study gender, student’s Algebra I semester grades and students’ level of motivation as self-reported on the Motivated Strategies for Learning Questionnaire (MSLQ) are some of the variables that were examined.

Purpose of the Study

The purpose of this study was to examine teachers' notion of their students' motivational beliefs. The study also explored the nature of any statistically significant differences between what students said about motivation with what their teachers perceived as motivating factors for their students. Furthermore, it examined the nature of any significant differences in the perception of motivating factors between groups of high school students (females vs. males) enrolled in Algebra I. The study also considered the relationship of semester scores of students whose perception of motivation more closely related to their teacher's perception of what motivates students in a mathematics class.

Research Questions

The guiding research question was: Are teachers' and their students' perceptions about motivation in Algebra I class congruent? The following specific research questions were used to develop the response to this guiding research question.

(1) Does a meaningful difference exist between teachers' perceptions and their students' perceptions about motivation in an Algebra I class,

(2) Is there a meaningful difference between what males enrolled in high school Algebra I say motivates them and what females say motivates them,

(3) To what extent, if any, does gender play a role in mathematics achievement as measured by semester grades in Algebra I, and

(4) Does there exist a meaningful relationship between a person's reported level of motivation to learn in an Algebra I class and their semester scores.

Significance of the Study

There is much research available on student motivation (e.g., Kohn, 1994; Cameron & Pierce, 1994; Deci, Koestner, & Ryan, 1999, 2001a, 2001b; Cameron, 2001). However, there is insufficient research on Hispanic high schools students' notion of motivation in the mathematics classroom and more significantly on the relationship between students' perception of motivation and their teachers. Studies show that most teachers have little, if any, notion of the motivational beliefs of their students (Middleton, 1992; Litchfield et al., 1998). Unfortunately, "One of the most available and least used sources of information about student wants and needs is the students themselves" (Litchfield et al., 1998).

This study investigated students' and their teachers' perception of motivation in a high school mathematics classroom, specifically Hispanic students enrolled in an Algebra I course. The Texas Education Agency (2006) mandates the Texas Essential Knowledge and Skills (TEKS) objectives, along with the following detailed description of basic understandings in an Algebra I course:

> (1) Foundation concepts for high school mathematics. As presented in Grades K-8, the basic understandings of number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry; measurement; and probability and statistics are essential foundations for all work in high school mathematics. Students will continue to build on this foundation as they expand their understanding through other mathematical experiences.
>
> (2) Algebraic thinking and symbolic reasoning. Symbolic reasoning plays a critical role in algebra; symbols provide powerful ways to represent mathematical situations and to express generalizations. Students use symbols in a variety of ways to study relationships among quantities.

(3) Function concepts. A function is a fundamental mathematical concept; it expresses a special kind of relationship between two quantities. Students use functions to determine one quantity from another, to represent and model problem situations, and to analyze and interpret relationships.

(4) Relationship between equations and functions. Equations and inequalities arise as a way of asking and answering questions involving functional relationships. Students work in many situations to set up equations and inequalities and use a variety of methods to solve them.

(5) Tools for algebraic thinking. Techniques for working with functions and equations are essential in understanding underlying relationships. Students use a variety of representations (concrete, pictorial, numerical, symbolic, graphical, and verbal), tools, and technology (including, but not limited to, calculators with graphing capabilities, data collection devices, and computers) to model mathematical situations to solve meaningful problems.

(5) Underlying mathematical processes. Many processes underlie all content areas in mathematics. As they do mathematics, students continually use problem-solving, language and communication, and reasoning (justification and proof) to make connections within and outside mathematics. Students also use multiple representations, technology, applications and modeling, and numerical fluency in problem-solving contexts.

The information provided by this study is useful and meaningful to leaders of mathematics departments. They are the educational stakeholders in charge of providing appropriate assistance and guidance to teachers in their quest to find strategies for motivating students in their mathematics classes. This study is also valuable to teachers of mathematics because as teachers gain knowledge of what factors students perceive as motivating, they will be better able to create a classroom environment that increases motivation (Middleton, 1992, Litchfield et al., 1998).

Definitions of Terms

Some terms used in this study are:

Motivation to learn—refers to the desire to actively and knowingly participate in the learning process. It is "the meaningfulness, value, and benefits of academic tasks to the learner—regardless of whether or not they are intrinsically interesting" (Marshall as cited in Lumsden, 1994, p. 1). It is characterized by long-term, quality involvement in learning and commitment to the process of learning (Ames as cited in Lumsden, 1994, p. 1).

Intrinsic motivation—students have intrinsic motivation when they have a desire to be taught or participate in an activity purely because they need to know more about something (Dev, 1997). Intrinsic motivation involves the learning of a concept for the sake of learning (Litchfield et al., 1998).

Extrinsic motivation—students are said to be extrinsically motivated when they undertake a task purely for the sake of attaining a reward or for avoiding some punishment (Dev, 1997).

Limited English Proficient (LEP)--"LEP are children of immigrant or migrant families more recently arrived in Texas" (Porter, 2000, p. 405)

English as a Second Language (ESL)—a component of the Bilingual Program for Limited English Proficient students in grades 6-12 (Slavin & Calderón, 2001).

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

Much has been written on the subject of human motivation and research on student motivation has gradually gained popularity (Brophy, 1986; Renchler, 1992). However, research dealing specifically with the motivation of Hispanic/Latino high school mathematics students is fairly “new” in comparison and not as abundant. Nonetheless, it is an issue of great importance to all education stakeholders for the reason that “by 2010, Latinos will be the largest minority group in the United States, surpassing African Americans” (Slavin & Calderón, 2001, p. viii) and "by 2050, half of all Americans will be 'minority'" (“Fair or Foul? Forecasts,” 1999, p. 6).

This chapter presents a review of the literature on the subject of student motivation; it further gives an overview on the history of the research of motivation of students in particular, high school students. It also includes a synopsis of the wide-ranging debate concerning intrinsic and extrinsic motivation and the effect that rewards coercion and/or threats have on students’ motivation for achievement. Additionally, it includes a general picture of research dealing with teacher behaviors and strategies such as providing a positive environment and demonstrating positive beliefs, things that have proven effective in fostering the motivation of students to achieve and become life-long learners (de Charms, 1984).

History of Research on Student Motivation

At the beginning of the twentieth century, motivation was not very well defined and was included as a discipline of psychology. Research on motivation then was not a separate topic of study as it is today; rather, views on motivation and psychology were rooted in philosophy (Mcdougall, 2004). Alderman (2004) asserts "the field of motivation has seen an enormous increase in its knowledge base over the last decade of the 20th century and into the 21st century" (p. xv). Early in the 20th century research dealing with motivation focused on “ways to motivate industrial workers to work faster, harder, and better” (Small, 1997, p. 1).

During the past two or three decades, research concerning student motivation has led to some profound changes in how motivation is defined and what forces are behind the motivation to learn, perform, or make important life decisions (O’Neil, Sugrue, & Baker, 1995-96). Accordingly, research on student motivation has gradually gained popularity. During the past 40 to 50 years, for example, school administrators have become increasingly interested in theories surrounding student motivation. In the mid 1980’s, Ames and Ames (1984) wrote in the preface to their book, *Research on Motivation in Education*: “only in the past 20 years…has the systematic study of motivational processes in education setting received significant and sustained attention by researchers in psychology and education” (p. xi).

Many factors have contributed to the movement of research from the motivation of industrial workers to a more systematic approach to motivating students. One factor that contributed to this movement is the quest for enhancing instructional goals to

become more competitive with other countries, especially after the publication of *A Nation at Risk* (National Commission of Excellence in Education, 1983). Another contributing factor was the pursuit for improvement of classroom management in order to meet the needs of diverse populations (Hart & Allexsaht-Snider, 1996).

Finding ways to increase the academic motivation of students who lack the "drive" to learn for learning's sake has been a major concern in the educational arena. Thus, the need is obvious for more educational research concentrating specifically on student motivation and it's impact on student achievement (Renchler, 1991).

Intrinsic vs. Extrinsic Motivation: The Debate

Student motivation is the desire to participate in the learning process, but more importantly, it is the reason why students participate or not in the learning process (Lumsden, 1994). Students participating in the learning process are all motivated to be participants but the reasons, their motivation, the why they are participating may differ. These sources of motivation may be intrinsic, e.g. desire to learn for learning sake or the feeling of accomplishment or may be extrinsic, e.g. participating to receive a reward or to avoid punishment (Lepper, 1988).

Research concerning intrinsic and extrinsic motivation presents differing views about each one. Some studies (Deci et al., 1999, 2001a, 2001b; Kohn, 1994; Dev, 1997) conclude that intrinsic motivation is better for engaging students in the learning process, while others claim that the appropriate use of extrinsic motivators, such as tangible rewards, is the better choice for getting students involved in their own learning (Cameron, 2001; Cameron & Pierce, 1994). DeKeyrel, Dernovish, Epperly, and McKay

(2000) maintain that extrinsic motivators do not influence students to change their attitudes or behavior. Furthermore, they claim that in the real school environment, extrinsic motivators are detrimental to the development of any intrinsic motivation. Still, other studies (Hidi, 2000; Hidi & Harackiewiecz, 2000) note a balance of both is more advantageous for teachers to motivate students to take on the responsibility of their own learning. Some researchers (Hidi, 2000; Hidi & Harackiewicz, 2000; Cameron, 2001) believe to first extrinsically motivate students in order for them to eventually become intrinsically motivated to learn the lesson. Dev (1997) explains that the research, which examines student motivation, presents mixed and sometimes-opposite results. Likewise, Cameron (2001) called extrinsic versus intrinsic motivation a “hotbed for debate” (p. 30). The contrasts between extrinsic motivation and intrinsic motivation continue to create rich discussion particularly because intrinsic and extrinsic motivational strategies are for the most part thought of as dichotomous by a great number of teachers.

Consequently, an extensive debate exists between proponents of each type of motivation. The debate gives rise to several questions. For example, how are students motivated to develop individual feelings of achievement in mathematics classrooms? Can teachers provide the intervention necessary to motivate students to become life-long learners? What pedagogical practices enhance the motivational level of students? Which type provides the most benefits for students?

One of teachers’ major challenges is to attempt to motivate students or entice them to learn for learning’s sake and not for grades or other external imposed factors. As McCombs (n.d.) suggests, teachers are challenged to “inspire[ing] a thirst for

knowledge”(p. 6). Or as Brophy (1986) claims teachers have to be able of stimulate students to learn. Perhaps more teachers need to examine their students closely and decide if intrinsic, extrinsic or a combination of both types of motivation is best for their individual students.

Intrinsic Motivation

Intrinsic motivation involves the learning of a concept for the sake of learning (Lepper, 1988: Lumsden, 1994; Litchfield et al., 1998). Along this same concept is Hidi and Harackiewicz (2000) definition of intrinsic motivation as the “motivation to engage in activities for their own sake” (p. 157). Proponents of intrinsic motivation believe it is more beneficial than the incentive systems used with extrinsic motivation (Condry & Chambers, 1978; Kohn, 1994; Deci et al., 2001a). Alfie Kohn (1994), a leading critic of extrinsic motivation, affirms that the use of extrinsic motivation diminishes learning for the sake of learning.

Numerous researchers have conducted studies that show the benefits of intrinsic motivation and have pointed out the major advantages to using intrinsic motivation instead of extrinsic motivation (Condry & Chambers, 1978; The Institute for the Learning of Sciences, 1994; Kohn, 1994; Lumsden, 1994; Deci et al., 2001a, 2001b).

Identifying intrinsically motivated students is important. Lashaway-Bokina (2000) notes that the classroom teacher’s ability to recognize intrinsic motivation is a crucial factor that enhances curriculum and classroom behavior. She found that pre-service teachers need instruction in identifying gifted students that are intrinsically motivated to learn when she taught two sections of Classroom Methodology and

Management at the University of Texas-Brownsville. The two sections were made up of 48 advanced undergraduate interns who were to observe over 1,000 K-5 students in 12 schools in Brownsville Independent School District. The undergraduate interns (pre-service teachers) were given information on intrinsic motivation and were asked to identify a student who appeared to be intrinsically motivated to learn and to note what influenced their decision. Lashaway-Bokina suspects that some of the students selected as being intrinsically motivated were actually those who exhibited conforming behaviors and perfectionism, while truly intrinsically motivated students were not identified as such. Lashaway-Bokina further explains, "highly active, inquisitive, and creative students were overlooked because of classroom behavior problems." (p.226). Teachers must be aware of their students' motivation and the unique characteristics that intrinsically motivated students bring to classrooms because they may not be conforming to classroom norms. The Institute for the Learning of Sciences (1994) emphasizes the benefits of maximizing intrinsic motivation and contends that motivation can be induced artificially (extrinsically), but its effects then are temporary.

Extrinsic Motivation

Unlike intrinsic motivation, extrinsic motivation deals with learning a concept for the grade or other reward that is being offered when and if learning takes place. Extrinsic motivation can be viewed as coercing or bribing students to learn; hence, undermining the development of intrinsic of motivation. Educational psychologists have noted that extrinsic motivation is an alternative that may at times be used to get students to learn concepts. However, Hidi (2000) and Cameron (2001) argue that studies included in

meta-analysis examined the effects of external rewards on short term and simple activities, and that the results might be different with long-term and complex tasks. Other studies have explored the benefits of extrinsic motivation (Cameron & Pierce, 1994).

There is evidence suggesting that extrinsic motivation undermines learning for the sake of learning rather than encouraging it (The Institute for the Learning of Sciences, 1994; Kohn, 1994; Lumsden, 1994; Deci et al., 2001a, Dev, 1997). Nonetheless, teachers have used extrinsic motivation for many years to motivate students. The reward system is a trend in U.S. schools today; however, if this system continues, educators may fail to intrinsically motivate students, asserts Horn (1991).

The Reward System

"Although external rewards have been used in the classroom for more than a century to bring about desired behavior, their efficacy is being questioned by educators and parents alike" (Dev, 1997, p. 14). Studies by Deci et al., (1999, 2001a, 2001b) found external rewards detrimental to the intrinsic motivation of the learner. Deci et al. (1999) conducted a meta-analysis of 128 experiments that examined the effects of extrinsic rewards on intrinsic motivation. They found that tangible rewards do undermine intrinsic motivation across a wide range of interesting activities, populations, and types of rewards.

In like manner, Deci et al., (2001b) confirm that students' intrinsic motivation is significantly decreased when educators use rewards to get students to perform. And further Deci et al. (2001b) conclude "the use of rewards as a motivational strategy is

clearly a risky proposition." (p. 50). Furthermore, Good and Brophy (2000) consider rewards as helpful to teachers; however, recognize the fact that "rewards and bribes should be minimized in classrooms" (p. 139). Also, Brophy (1986) acknowledges, "grades and other extrinsic incentive systems stop short of motivating students to learn the academic content and skills being taught" (p. 342). It is interesting to note that even though Good and Brophy (2000) agree with motivational theorists that rewards should not be emphasized in any classroom, they note that occasionally and if used properly rewards can be helpful.

However, Hidi and Harackiewicz (2000) noted, increasing intrinsic sources of motivation does not necessarily mean that all extrinsic sources are questionable. Cameron (2001) emphasizes this point by stating that a meta-analysis of 96 studies carried out in 1994 and another of 145 studies carried out in 1999, revealed that rewards have little or no negative effect on intrinsic motivation of students. Cameron also states that, "an implication of our findings is that rewards can be used to increase motivation and performance on low-interest academic activities" (p. 34). Moreover, Hill (2000) points out that in certain situations, extrinsic rewards are particularly useful as a motivational tool. Kohn (1993) disagrees and presents three statements as facts: "Fact 1: Young students don't need rewards to learn, Fact 2: At any age, rewards are less effective than intrinsic motivation and Fact 3: Rewards for learning undermine intrinsic motivation" (p. 144-148).

Teachers' Beliefs on Motivation

The willingness or unwillingness of students to learn is of great concern to classroom teachers (Null, 2003). A classroom teacher can influence the student's willingness to be an active participate in the educational process of learning (Lumsden, 1994). From Luce's (1990) perspective, "classrooms don't have to be deadly, and students who seem to be unmotivated don't have to remain in the unmotivated stage for very long" (p. 2). Even though it sometimes seems that teachers have no control over student's level or source of motivation, research has found that it is not entirely true (Anderman & Midgley, 1998). Unfortunately, teachers' idea of motivation differs and thus they motivate their students according to their beliefs. Although various popular views of motivation do exist, according to Lowman (1990), there are some very simplistic views about motivation. A popular notion noted, for example, is that many teachers think that unmotivated students are weak and/or not able to learn the material. Lowman also notes that motivation can be acquired from encouragement (urgings) from the teacher. For example, students may be motivated to do well on an exam by having the teacher give them a "pep" talk before the exam. One other popular view among teachers is that positive and/or negative feedback will motivate. Undoubtedly, teachers' views and their feedback play a very important role in motivating students.

Verbal Praise

Overall, research that looks at teacher's behavior highlights the major role teachers' play in increasing students' motivation to learn and eventually taking students out of the "unmotivating stage" (Luce, 1990, p. 2). Research by Christophel and Gorham

(1995), points out that “motivation is modifiable” (p. 304) and suggest that teachers can do something about motivating students. Linnenbrink & Pintrich (2002) agree and note that student motivation is “inherently changeable and sensitive” (p. 313) to the situation or environment. This, they add, provide optimism for teachers and knowledge that their motivating strategies can make a difference in motivating students. This is critical since students “who are more motivated learn more…. those who learn more become more motivated” (Richmond, 1990, p. 194).

Teachers utilize a number of strategies, for example verbal praise, threats or even coercion, to entice student’s to learn. Although findings of studies in which verbal praise is used as an extrinsic motivator vary significantly, many teachers have utilized verbal praise as a major component of the “magical” formula. Hancock (2000) found that properly administered verbal praise does positively affect students’ motivation to engage in behaviors associated with learning (e.g., completing homework). Although studies similar to Hancock’s conclude that verbal praise does increase students’ motivation, other researchers (Good & Brophy, 2000; Dev, 1997) claim the opposite. For example, they claim that much of the verbal praise is controlling in nature and does not express appreciation for students’ efforts. Additionally, they state that verbal praise may convey a message of teacher control of their students’ learning rather than student-centered learning.

Coercion and Threats

Richmond (1990) conducted a study and found that coercion or threats by the teacher can increase learning in the short run but are detrimental long-term effects. He

concludes, students cannot be forced or coerced to learn because then they may avoid the teacher and/or the class. In another study, Christophel (1990) studied teacher immediacy (closeness) and student trait and motivation and how these relate to learning. He found that student's learning increased when teachers created immediacy with their students. The immediacy could be either verbal or non-verbal. In a similar study (Bainbridge-Frymier & Shulman, 1995) teacher immediacy was found to have a positive impact on student motivation.

Stipek, Givvin, Salmon and McGyvers (1998) present another interesting study in which motivation was a significant component of the intervention. In this study, three groups of 27 pre-service teachers were studied. One of the groups called the integrating mathematics assessment (IMA) group was provided with an intensive intervention focused on assessment of mathematics understanding and motivation. This group was given professional development dealing with reform-minded mathematics education as encouraged by the National Council of Teachers of Mathematics (1989). The reform provided to this group involved pedagogy that addressed the motivation of students. The second group, the traditional group, taught using the textbook and workbooks. The teachers in this group were not interested in reform-minded education. The third group, the support group, was provided only with opportunities for collegial support and collaboration. The results show that teachers in the IMA group were able to more accurately judge students' motivation than did the teachers in the other two groups. The findings in this study stressed the need for teachers to participate in professional development programs that help make accurate judgments about students' motivation.

Motivation and Mathematics Achievement

In the 1970's, the highly publicized international comparisons of academic achievement, which placed U.S. students at the bottom of the scale, (Angus & Mirel, 1997) forced educators to take a closer look at the educational system available at the time. Additionally, *A Nation at Risk* (National Commission of Excellence in Education, 1983) highlighted possible risks to economic growth and national security that could arise if the U.S. fails to adequately educate its students in mathematics. These developments forced researchers to focus attention on the motivation of students to learn, especially in the field of mathematics. Mathematical success is critical for a wide array of education and career opportunities for students. This fact also contributes to the emphasis that should be placed on students' motivation for learning mathematics (Hart & Allexsaht-Snider, 1996). Addressing the issue of motivation seems particularly important, especially since "present pedagogical practices crush most students' desire to learn" (Renchler, 1992, p. 1).

Implementing effective teaching strategies to stimulate student motivation to learn "may be much more difficult in mathematics classes and this difficulty (and not just the difficulty of the subject matter) may be an important reason why many students dislike mathematics" (Brophy, 1986, p. 344). In general, factors such as "fluency in English, mathematics anxiety and motivation, and preconceptions about mathematics influence minority students' mathematics achievement" (Ascher, 1983, p. 2).

For mathematics teachers "math is perceived as a more difficult and challenging subject area than others" (Gottfried, 1985, p. 643). Perhaps that is so because more than

in any other subject area, students in mathematics courses have low expectations of success (National Research Council, 1989; Grouws & Lembke, 1996). These low expectations of success present difficulties for teaching mathematics. Many of them are the result of "cultural attitudes…that make it socially acceptable, even trendy, to lack mathematical knowledge" (Deitte & Howe, 2003, p. 278). Consequently, teaching mathematics may require motivating more students than teaching other subjects. Carr (1996) believes it is imperative for students to be motivated in mathematics classrooms. Mathematically motivated students are those who will be proficient in mathematics; thus, they will likely be able to fully function as productive citizens of society (National Research Council, 2001).

Kloosterman (1998) concludes that motivation is "multi-dimensional" and adds, " . . . there are no magic answers to motivating students in high school mathematics" (p.16). Brophy (1986) concurs, "…there appears to be a challenge here for mathematics educators" (p. 344).

Gender Differences and Motivation

The U. S. Department's report, *Trends in Educational Equity of Girls & Women: 2004*, presents an overview of the educational status of girls and women in the U. S. This report states " . . . females are now doing as well as or better than males on many indicators of achievement and educational attainment, and that large gaps that once existed between males and females have been eliminated in most cases and have significantly decreased in other cases" (p. 2). The report; however, also states that they are still underrepresented in other fields and are lacking in numbers enrolled in doctoral

and degree programs in universities. Studies done with adolescents indicate that girls are less likely than boys to pursue a higher education or a math related career (Bleeker, 2002).

Gender, has been shown to be an important factor in the motivation of students (Middleton, 1992). The Nation's Report Card shows that female students had higher average reading scores than their male counterparts on the NAEP at ages 9, 13, and 17. That same year, there was no measurable difference between average mathematics scores of male and female students at all three ages groups, male students scored higher on average than female students (Perie & Moran, 2005). Nonetheless, if grades are the only indicator, then girls will outperform the boys in school (Wigfield, Battle, Keller, & Eccles, n.d.). Girls tend to score higher in reading related fields whereas boys tend to score higher in mathematics related fields. Since the 1970's closing the gap for girls in mathematics and science has been the spotlight. Recently, the spotlight has moved to narrowing the gap for boys in reading and writing (Freeman, 2004).

Freeman (2004) concludes in the U. S. Department of Education's *Trends in Educational Equity of Girls & Women Report* "large gaps that once existed between males and females have been eliminated in most cases and have significantly decreased in other areas (p. 1). Thus, conclusions about gender studies must be viewed carefully because even though differences may be observed they are generally small. (Wigfield et al., n.d.).

Some Strategies for Fostering Motivation

Positive Beliefs

Rinne (1998) notes that teachers often complain because students lack the motivation to learn and are not interested in school or in the work required. He stipulates that student motivation "is a chronic concern in schools today" (p. 620). Researchers oftentimes provide suggestions on approaches, strategies, and activities for teachers and administrators to help enhance student motivation (Middleton, 1992; Hunter, 1995; Dev, 1997; McCombs & Pope, 1998). For example, according to de Charms (1984), the first and most important thing that teachers must do is to believe that **all** students can be motivated. In other words, teachers must believe that they themselves can have an effect on students. Hrabowski (2003) offers "Educators can contribute to minority students' academic and personal success simply by communicating high expectations" (p. 47).

A Positive Environment

The second thing is for teachers to secure a positive classroom climate where individual students' needs are met. Or as Rinni (1998) suggests, teachers should use "latent intrinsic appeals" (p. 621) within the lessons to capture student motivation.

One key idea in motivational research concerns instructional approaches and strategies for teaching students with differing motivational levels. Related literature on student motivation suggests that teachers can generate student motivation by creating an atmosphere in which the instructional climate creates a positive psychological environment (Renchler, 1992; Lumsden, 1994). It is important to note that providing this positive instructional climate is far easier with the support and encouragement of

administrators and school leaders. Research has shown that students are more motivated to learn when teachers provide them with opportunities to make decisions and to have some control over the learning process (McCombs & Pope, 1998). This is easier to accomplish with the support of school leaders. A cooperative venture between the teacher and the administrator could stress the importance of implementing motivating strategies by teachers (Renchler, 1992).

Teachers can learn to understand their students' motivation and then strive to integrate motivation into the lessons that pertain to those motivations (Middleton, 1992). For example, teachers can integrate motivational strategies by preparing lessons that deal with topics or areas that students are interested in; for instance, core subjects like history or science, or the fine arts such as music or extracurricular activities and sports. Most of the teachers in a study conducted by Middleton (1992) had little or no idea of their students' motivational beliefs. This finding suggests that talking to students about their goals and considering how those goals relate to the goals of the class may help teachers find out what motivates students to learn.

Grades, Effort and Learning

Teachers should be mindful that too many students are hung up on grades and on working for grades. They make getting good grades their goal. Grades are important, but learning is more important. An article by Nolen (1988) notes that the strategy students choose during problem solving is affected by their goals. For example, he explains that students who learn for learning's sake and students who learn to get good grades use different kinds of strategies when working on a challenging problem. Those who work

for good grades are interested in finding the “right” answers, while those who are learning for learning’s sake are concerned with the process and the concepts. He emphasizes that teachers should encourage students to concentrate on the learning process, rather than the “quick” answer because the learning process will have more positive long-term and more durable effects on lifelong learning.

Dev (1997) notes teachers should evaluate the task rather than the student. Since there is little to do about the lack of ability that students bring to school, educators must concentrate on the lack of effort by students. Many factors contribute to students’ lack of effort. Among them are difficult or boring schoolwork, demanding teachers, the students’ neglect of their studies, and the preference of non-academic activities by students (Hidi & Harackiewicz, 2000). Several observers have concluded that schooling for students would be more successful if the focus were on students’ effort, rather than ability (Ames & Ames, 1984; Pintrich & Schunk, 1996; Stipek, et al., 1998). Students say they are motivated by topic relevance, lively lessons, positive school climate, and teacher awareness of their learning needs (Middleton, 1992; Hill, 2000; Hopkins, 2000).

Motivation for learning depends on the alignment of students’ and teachers’ perceptions of what motivates students. “There are several factors that affect student motivation. Teachers must exhibit excitement and enthusiasm in the classroom. Attitude must be coupled with lessons that are meaningful and relevant and that are easily transferred to everyday life” (Dekeyrel et al., 2000, p. 18).

Deitte and Howe (2003) summarize that "student motivation is an essential component of successful student learning, but it is also one of the most challenging areas for teachers" (p. 280). Lampert (2001) directs attention to the fact that,

> Teachers face some students who do not want to learn what they want to teach, some who already know it, or think they do, and some who are poorly prepared to study what is taught. They must figure out how to teach each student, while working with a class of students who are all different from one another. They have a limited amount of time to teach what needs to be taught, and they are interrupted often (p. 1).

Thus, and with good reason, teachers especially teachers of mathematics need to feel confident in their classrooms, excited and enthused about the lessons, they must know the mathematical concepts to be taught and more importantly they must be aware of their students' perceptions of motivational strategies. Nonetheless, regarding academic motivation targeting motivation in mathematics we've come a long way but "much remains to be done" (Kloosterman, 1997, final comments, para. 6).

CHAPTER III

METHODOLOGY

Purpose

The purpose of this study was to examine teachers' notion of their students' motivational beliefs. This study investigated the nature of any statistically significant differences in what students perceive as motivating factors in Algebra I class with what their teachers perceive as motivating factors. Furthermore, it examined the nature of any significant differences in the perception of motivating factors between female and male students enrolled in Algebra I and looked at the correlation between gender and mathematics achievement as measured by end-of-course grades. In addition, it explored any statistically significant relationship between students reported level of motivation to learn in Algebra I class and their semester grade.

If teachers learn the factors students perceive as motivating, the better able they are to create learning environments that increase student motivation (Litchfield et al, 1998).

Population and Setting

The participants were obtained by taking a convenience sample. A convenience sample was used for this research because of the availability of the participants and its effectiveness in helping to provide an understanding of existing relationships (McMillan, 2000). Participants included nine high school teachers teaching at least one Algebra I class and one-hundred forty-eight high school students enrolled in their Algebra I class during the 2006 spring semester in a predominately Hispanic/Latino school district in a

south Texas town bordering Mexico. Tables 1 and 2 show the 2004-2005 district's demographics by programs and ethnicity respectively.

Table 1
District's Population by Program

Program	No.	%
Bilingual/ESL	16,225	65.5%
Career & Technology	5,638	22.8%
Special Education	3,121	12.6%
Gifted & Talented	1,838	7.4%

Table 2
District's Population by Ethnicity

	District		Sample	
Ethnicity	No.	%	No.	%
Latino/Hispanic	24,848	99.5	115	.991

Table 2 (Continued)

	District		Sample	
Ethnicity	No.	%	No.	%
White, Non-Hispanic	81	.32	1.0	.009
Asian or Pacific Islander	28	.11	0.0	0.0
Black, Non-Hispanic	14	.06	0.0	0.0
American Indian	2	.01	0.0	0.0
Total	24,973	100	116	100

Two teachers were first year teachers, one had been teaching for 15 years and the others' teaching experience ranged from 4 years to 7 years. Student participants (N = 148) signed a consent form (See Appendix B-Student Consent Form) and were asked to complete the Motivated Strategies for Learning Questionnaire (MSLQ) (See Appendix C-survey). Since all participants were under 18 years old their parents also signed a consent form (See Appendix B-Parents' Consent Form) allowing their sons/daughters to participate in the study. A great majority, 96.6%, of the students classified themselves as Hispanic. Of the students (n = 116) ultimately participating, 109 were classified as

freshmen (9th graders) and 7 were sophomores (10th graders). Generally Algebra I is a course taken by freshmen. Thus, juniors (11th graders) and seniors (12th graders) did not participate in the study (see Table 3 for participants' demographics).

Table 3
Frequency Table of Participants' Demographics

	Gender		Ethnicity		Class Rank	
	Female	Male	Hispanic/Latino	Other	Freshman	Sophomore
Frequency	56	60	112	4	109	7
Percent	48.3	51.7	96.6	3.45	94.0	6.0

Instrumentation

Student motivation varies with each subject and is usually assessed for a specific subject area, such as mathematics or reading, or to a specific classroom or teacher. "This implies that assessment instruments that assess general student motivation for school or academics may not be as useful as more domain or context specific assessment tools" (Linnenbrink & Pintrich, 2002, p. 314). The Motivated Strategies for Learning Questionnaire (MSLQ) is a questionnaire designed to assess students' motivational orientations for junior high through college students and is recommended as the assessment instrument for researchers who are interested in students' motivation in a particular subject (Linnenbrink & Pintrich, 2002). The MSLQ (Pintrich et al., 1991) was

selected as the instrument to measure the components of motivation explored in this study. Developed by Pintrich, Smith, Garcia, and McKeachie (1991) at the National Center for the Improvement of Postsecondary Teaching and Learning (NCRIPTAL) at the University of Michigan, the MSLQ includes fifteen scales. It is divided into two sections, a motivation section and a learning strategies section. For this study only the motivation section was used.

The motivation section of the MSLQ consists of 31 items that assess students' goals and value beliefs for a course and their beliefs about their skill to succeed in that particular course. The questionnaire has been found to yield reliable and valid data in previous studies with similar samples (Pintrich & Smith, 1993; McClendon, 1996). Some studies found that MSLQ was highly correlated to students' achievement in school (McClendon, 1996; Barker & Olson, 1999). The MSLQ has been administered to a group of high school students to determine what effects certain elements had on the motivation of students taking Precalculus and Physics (Allen, 1993). In addition, a modified version of the MSLQ was administered to 577 seventh and eighth graders to assess students' motivation, goals, and beliefs about their skills to succeed in school (Dekeyrel et al., 2000).

The MSLQ's 31 motivational scales have been tested for factor validity by using a confirmatory analysis (Pintrich et al., 1991). Three components, value, expectancy and affective, were used. These components were used to address the six underlying factors. The 31 motivation items were tested to see how well they fit the following six factors as

described by Pintrich et al., (1991) within each of the three components of the instrument:

Value Component

The value component included three factors, 1) intrinsic goal orientation, 2) extrinsic goal orientation, and 3) task value.

Intrinsic Goal Orientation—student's own perception of why it is important to engage in a learning activity. The student is concerned with things such as the "challenge, the curiosity, and the mastery of the task" (Pintrich et al., 1991). Some examples of the items in this subscale are: #1 In a class like this, I prefer course material that really challenges me so I can learn new things, #16 In a class like this, I prefer course material that arouses my curiosity, even it is difficult to learn.

Extrinsic Goal Motivation—the degree to which the student perceives the importance of engaging in a learning activity. The student is concerned with things such as grades, rewards, performance, and evaluation by others and the feeling of competing for something. Some examples of the items in this subscale are: #7 Getting a good grade in this class is the most satisfying thing for me right now, # 30 I want to do well in this class because it is important to show my ability to my family, friends, employer, or others.

Task Value—the reason that the student is engaged in the task. It refers to the student's own evaluation of how interesting, important, and useful the task is. It is associated with terms such as interest and importance. Some examples of the items in this subscale are: # 4 I think I will be able to use what I learn in this course in other

courses, # 17 I am very interested in the content area of this course, #26 I like the subject matter of this course.

Expectancy Component

The second component, expectancy, included two factors, 1) control of learning beliefs and 2) self-efficacy for learning and performance.

Control of Learning Beliefs—the student's beliefs that their own effort(s) will pay off and positive outcomes are a result of the efforts involved in completing the task. It deals with the belief that outcomes are contingent on one's own efforts. Some examples of the items in this subscale are: #2 If I study in appropriate ways, then I will be able to learn the material in this course, #18 If I try hard enough, then I will understand the course material.

Self-efficacy for Learning and Performance—two aspects of expectancy. One is for success and the other is for self-efficacy. It is concerned with students' ability to accomplish a task, as well as students' confidence in their ability to perform and complete the task. Some examples of the items in this subscale are: #5 I believe I will receive an excellent grade in this class, #15 I am confident I can understand the basic concepts taught in this course, # 31 Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.

Affective Component

The third component of the MSLQ was the affective and it included only one factor, test anxiety.

Test Anxiety—made up of two components: a worry or cognitive component and an emotional component. Students' negative thoughts that eventually disrupt the performance constitute the worry component while the emotionality component refers to the affective and physiological aspects of anxiety. Some examples of the items in this subscale are: #3 When I take a test I think how poorly I am doing compared with other students, # 19 I have an uneasy, upset feeling when I take an exam and #14 When I take tests I think of the consequences of failing.

Procedures

The study was conducted during the 2006 spring semester in a predominantly Hispanic/Latino South Texas school district bordering Mexico. It took place during the last three weeks of the last six weeks period of the spring 2006 semester. The central focus was examining the perceived motivation of students classified as freshmen and enrolled in Algebra I class. Initially participants totaled N = 148; however, participants who did not completely fill the questionnaire were excluded from the analysis. This yielded an n = 116. In the end a total of n =116 fully participated. That is 78.3% of original N=148.

All high school teachers teaching Algebra I during the second semester were invited to attend a meeting. Two meetings with Algebra I teachers of the high schools in the district were conducted by the study's principal investigator. All teachers teaching one or more Algebra I classes attended the meeting and were asked to participate in the study. All paper work, including student and parent consent forms as well as copies of questionnaire, were provided to all teachers present. All consent forms and

questionnaires were provided in English as well as in Spanish for any English as a Second Language (ESL) or Limited English Proficient (LEP) Spanish-speaking student or parent. Detailed information about the study was presented during the meeting and all questions were answered. Ultimately nine teachers from the high schools volunteered and took part in the study. A second meeting was held with these nine teachers to provide specific details on relating to students the fact that even though it was not for a grade that being accurate and honest in answering the questionnaire was critical. The nine teachers distributed and picked up parental and student consent forms from their Algebra I students. Students returning consent forms and signed parental permission forms were asked to complete the MSLQ Survey.

Collection of Data

Demographic data such as gender, parent's level of education and whether the parent's education was obtained in Mexico or U.S., whether they had siblings that had obtained a college degree was collected from the sample. Table 4 shows that of the students that provided demographic information approximately 60% of their fathers and 69% of their mothers have at least a secondary education and at least 25% and 19% of the fathers and mothers, respectively, have a college degree. Over 50% of both parents obtained their education in Mexico. The collection of data also involved the administration of the Motivated Strategies for Learning Questionnaire (MSLQ), the end-of-year semester grades for their Algebra I class. Participating students were asked to answer the motivation section, which consisted of 31 items of the MSLQ (1 = not at all true, 7 = very true) in order to determine their beliefs about their motivation to succeed

in Algebra I and to answer one open-ended question in their own words. The question read, What motivates you to stay in school? The teachers also were asked to answer the survey thinking of how his/her average students would answer each of the items as they related to their class. Consent forms and questionnaires from each of their classes were collected by the nine teachers and were picked up by study's investigator for analysis of the data.

Table 4
Family's Level of Education

	Elementary		Secondary		College		Obtained in the U. S.		Obtained in Mexico	
	No.	%	No.	%	No.	%	No.	%	No.	%
Father	10	8.6	60	51.7	30	25.9	38	32.8	61	52.6
Mother	16	13.8	69	59.5	19	16.4	39	33.6	64	55.2
Siblings					15	12.9	15	12.9	0.0	0.0

Data Analysis

The Motivated Strategies for Learning Questionnaire (MSLQ) was the principal source for the data analyzed for this study. First, factor analysis was examined for the questionnaire. Pintrich and Smith (1993) previously conducted a confirmatory factor analysis (CFA) of the MSLQ in order to explore what the statements in the MSLQ questionnaire were attempting to measure. Analysis of the CFA revealed six subscales

measured by the instrument. There were six subscales within the 31 items of the MSLQ. The six subscales were (1) Intrinsic Goal Orientation, (2) Extrinsic Goal Orientation, (3) Task Value, (4) Control of Learning Beliefs, (5) Self-efficacy for Learning and Performance, and (6) Test Anxiety. Due to power limitations regarding the conducting of a confirmatory factor analysis, an exploratory factor analysis (EFA) was conducted to examine the structure and match to Pintrich et al.'s work. (see Tables 5 and 6). In conducting the EFA the orthogonal rotation method used was Varimax with Kaiser Normalization extracting values < .30. Analysis of the EFA shows that three questions, eight, nine, and twenty, did not load with the expected value of < .30. However, all other questions do load at values < .30. Questions eight, nine and twenty are items of concern and must be analyzed more carefully in future research.

Table 5
Rotated Factor Matrix of MSLQ Extracting Six Factors

	Rotated Factor Matrix						
		Factor					
Question #	Question (Subscale code)	1	2	3	4	5	6
18	If I try hard enough, then I will understand the course material. ([a]CLB)	.698		.341			

Table 5 (Continued)

Question #	Question (Subscale)	1	2	3	4	5	6
2	If I study in appropriate ways, then I will be able to learn the material in this course. ([a]CLB)	.668					
25	If I don't understand the course material, it is because I didn't try hard enough. ([a]CLB)	.344					
6	I'm certain I can understand the most difficult material presented in the readings for this course. ([b]S-ELP)		.686			.331	
29	I am certain I can master the skills being taught in this class. ([b]S-ELP)	.529	.595				
15	I'm confident I can understand the most complex material presented by the instructor in this course. ([b]S-ELP)		.501	.420		.391	

Table 5 (Continued)

Question #	Question (Subscale)	1	2	3	4	5	6
12	I am certain I can learn the basic concepts taught in this course. ([b]S-ELP)		.674	.319			
5	I believe I will receive an excellent grade in this class. ([b]S-ELP)		.442				
21	I expect I will do well in this class. ([b]S-ELP)	.345	.398	.349	.371		
31	Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class. ([b]S-ELP)	.378	.390	.339	.358		
17	I am very interested in the content of this course. ([c]TV)			.804			
26	I like the subject matter of this course. ([c]TV)	.369		.736			
23	I think the course material in this class is useful for me to learn. ([c]TV)		.338	.645			

Table 5 (Continued)

Question #	Question (Subscale)	1	2	3	4	5	6
10	It is important for me to learn the course material in this class. ([c]TV)		.464	.641			
4	I think I will be able to use what I learn in this course in other courses. ([c]TV)			.559			
27	Understanding the subject matter of this course is very important to me. ([c]TV)	.310	.435	.554			
22	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible. ([d]Int GO)			.362	.536	.312	
1	In a class like this, I prefer course material that really challenges me so I can learn new things. ([d]Int GO)	.379			.474	.337	
16	In a class like this, I prefer course material that arouses my curiosity, even if it is difficult. ([d]Int GO)		.427		.464		.444

Table 5 (Continued)

Question #	Question (Subscale)	1	2	3	4	5	6
24	When I have the opportunity in this class, I choose course assignments that I can learn from, even if they do not guarantee a good grade. ([d]Int GO)				.445	.438	
11	The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade. ([e]Ext GO)					.667	
7	Getting a good grade in this class is the most satisfying thing for me right now. ([e]Ext GO)	.381				.656	
30	I want to do well in this class because it is important to show my ability to my family, friends, employer, or others. ([e]Ext GO)				.311	.514	

Table 5 (Continued)

Question #	Question (Subscale)	1	2	3	4	5	6
13	If I can, I want to get better grades in this class than most other students. ([e]Ext GO)			.481		.509	
28	I feel my heart beating fast when I take an exam. ([f]TA)						.717
19	I have an uneasy, upset feeling when I take an exam. ([f]TA)						.700
3	When I take a test I think about how poorly I am doing compared with other students. ([f]TA)			.375			.512
14	When I take tests I think of the consequences of failing. ([f]TA)			.374			.450
*8	When I take a test I think about items on other parts of the test I can't answer. ([f]TA)				.450		
*9	It is my own fault if I don't learn the material in this course. ([a]CLB)	.199		.248	.116		

Table 5 (Continued)

Question #	Question (Subscale)	1	2	3	4	5	6
*20	I'm confident I can do an excellent job on the assignments and tests in this course. ([b]S-ELP)		.125				

Note. Rotation Method: Varimax with Kaiser Normalization. Extraction Method: Principal Axis Factoring. *= Items not loading with expected values, values less than .30 suppressed except for the last three items. [a]CLB = Control of Learning Beliefs. [b]S-ELP = Self-Efficacy for Learning and Performance. [c]TV = Task Value. [d]Int GO = Intrinsic Goal Orientation. [e]Ext GO = Extrinsic Goal Orientation. [f]TA = Test Anxiety;

Table 6
Total Variance Explained by Extracted Factors

	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %
1	11.195	36.114	36.114	10.806	34.857	34.857	5.244	16.917	16.917
2	2.559	8.255	44.369	2.071	6.680	41.538	3.584	11.562	28.479
3	1.605	5.179	49.547	1.237	3.991	45.528	2.953	9.527	38.006
4	1.600	5.160	54.708	1.133	3.656	49.185	2.004	6.465	44.471
5	1.294	4.173	58.881	.783	2.526	51.710	1.828	5.897	50.368
6	1.087	3.505	62.386	.597	1.927	53.637	1.013	3.269	53.637

Extraction Method: Principal Axis Factoring.

The internal reliability coefficients were also calculated for each of the six subscales. Table 7 shows side-by-side comparison of coefficient alphas in the Pintrich et al. (1991) study and the present study. The extrinsic goal orientation items have higher internal consistency than that obtained by Pintrich et al. The control of learning beliefs subscale has lower internal consistency compared to the value obtained by Pintrich et al. The remaining factors have almost the same or moderately lower internal consistency than Pintrich et al. (1993) study.

The accepted coefficient alpha value that applies in general to most studies is .70 or higher for a set of items to be considered a scale (George & Mallery, 2000). All subscales in this study fall above .70 with the exception of the two scales measuring control beliefs of learning and self-efficacy for learning and performance.

Table 7
Side-by-side Comparison of Coefficient Alphas in Pintrich et al. (1991) Study and Present Study

	Standardized Coefficient Alpha	
Factor (# of Questions)	Pintrich et al. (1993) Study	Present Study
Intrinsic goal orientation (4)	.74	.73
Extrinsic goal orientation (4)	.62	.81
Task value (6)	.90	.73
Control beliefs of learning (4)	.68	.53
Self-efficacy for learning and performance (8)	.93	.66
Test Anxiety (5)	.80	.73

The internal consistency reliability coefficients were calculated for the HA group and the LA group. Table 8 shows a side-by-side comparison of coefficient alphas of the HA and the LA groups. With the exception of a low value in self-efficacy and control of learning beliefs for the HA group all other values are close to or greater than .70.

Table 8
Side-by-side Comparison of Coefficient Alphas of HA Group and LA Group

	Standardized Coefficient Alpha	
Factor (# of Questions)	HA Group	LA Group
Intrinsic goal orientation (4)	.81	.76
Extrinsic goal orientation (4)	.87	.74
Task value (6)	.94	.76
Control of learning beliefs (4)	.63	.71
Self-efficacy for learning and performance (8)	.33	.80
Test Anxiety (5)	.80	.69

The Publication Manual of the American Psychological Association (APA) 5th edition style guide has included confidence intervals (CIs) as the best reporting strategy (APA, 2001). Present day researchers (Vacha-Haase, Nilsson, Reetz, Lance, & Thompson, 2000; Capraro, 2005; Cumming & Finch, 2005; Capraro, 2006) promote and encourage the use of CIs in reporting visual representations of results. According to

Capraro (2006), CIs are “infrequently used” (p. 4) in analyzing data; however, CIs are a powerful tool to use because they “provide a graphical tool to integrate or synthesize results” (p. 7) and most importantly they measure “how sure” we are of our results (p.10). In addition, Capraro notes, “they contain much more information than significance tests” (p. 2). Noting also the following reasons for reporting results:

- graphical displays lend themselves to enhanced understanding by readers,
- fairly easily obtained using common packages such as SPSS or the ESCI software developed by Cumming and Finch (2005),
- helpful in compiling studies supporting meta-analytic thinking (p. 2).

Cumming and Finch (2005), recommend using “rules of eye” (p. 170) to guide the interpretation of CIs. “Rules of eye”, they explain, is the inference of what the data represents graphically using estimation. By looking at the CIs for the independent means of two groups a “proportion overlap” (p. 175) is estimated. If the overlap is less than .50, then the $p < .05$. If the proportion overlap is a little more than .50, the intervals overlap by a little more than half the average of the margin of error. When the overlap is exactly zero then $p = .006$, a value much less than *alpha* = .01. If the overlap does not exist, then p is even smaller; however, if the bars overlap completely, then there is no statistically significant difference between the two. This is true provided that group sizes are at least ten and the margins of error are less than two (Cumming & Finch, 2005).

In the analysis of data for this study CIs were used to graphically report results of data. Confidence intervals show results graphically and illustrate at a glance the relationship that exists between perceptions of students in High Achievers (HA) and

Low Achievers (LA) groups and their teachers' perceptions of six subscales measuring motivation in the MSLQ. Also CIs were utilized to compare differences in self-reported motivation by gender and then by gender and semester grades. Additionally, an ANOVA with semester score as the dependent variable and motivation as the predictor variable was computed. Six simple comparisons *F*-tests were conducted so a Bonferroni Correction was invoked to limit inflation of Type I Error. These simple comparisons were used to examine the correlation between motivation level reported by students and their semester grades.

CHAPTER IV

RESULTS

Data Analysis

The primary goal of this study was to examine teachers' notions of their students' motivational beliefs as compared to their students own conceptions in Hispanic/Latino students. In restatement from the previous chapter, data were collected during the spring 2006 semester from high schools in a predominately Hispanic/Latino school district bordering Mexico. This study investigated the nature of any differences in Hispanic/Latino students' perceptions of motivating factors in Algebra I class with what their teachers perceive as motivating factors. Furthermore, it examined the nature of any relationships between or among perceptions of motivating factors between female and male students enrolled in Algebra I. In addition, any relationship between students reported level of motivation to learn in Algebra I class and his/her achievement was also examined.

What Motivates Students?

An open-ended question was included as part of the MSLQ. The question asked students to write about what motivates them to stay in school. Because the question was open-ended, most students who answered did so with either a short sentence or a phrase. The participants provided a variety of reasons why they were motivated to stay in school. Not all students answered the question, so the number does not correspond to the total number of students in the research sample. Looking at gender differences did not reveal any significant findings, but doing so provided a sense of what it is that males and

females see as motivating them to stay in school. See Table 9 for samples of responses by gender.

Three salient concepts emerged from the student responses: family and friends, finishing high school, and hopes for the future, including hopes of achieving a higher earning capacity. All responses to the question fell within one of the three concepts. Although brief, the individual responses offered nuanced explanations and provided information that is not measurable. For example, one student answered the question thus: “To be with my friends, my girl” and another wrote, “To study and see cute guys.” Such an answer would fit two categories: school and friends.

Almost an equal number of males (27) as females (26) mentioned a family member or friends as motivating factors influencing their decision to stay in school. Most indicated either a mother or a father, and a few others mentioned siblings. Not surprisingly, parents and siblings influenced the students’ decisions. But, in addition to family, students also cited friends, especially girlfriends or boyfriends, indicating the impact of peers on motivation. In addition to family and friends, participants who responded indicated that their hopes for the future motivated them to stay in school.

A higher number of males (39) than females (22) made reference to the future in their response. Students mentioned that getting a good job and/or going to college in the future motivated them to stay in school. Future career plans and income fell into this category. Some indicated that they hoped to “get a good job” or to “earn a lot of money.” Thus, their sense of how staying in school will impact their future aspirations appears to influence their decision to stay in school.

Table 9
Sample Responses by Gender to Open-Ended Question

		Females		Males	
Concept	Sample Responses	No.	%	No.	%
Family/friends	My mom	26	22.4	27	23.2
	My parents				
	To help my family				
	To be with my friends my Girl				
	My boy friend motivates me to				
	stay in school				
	The girls				
	My friends and my teachers				
Future	Get a Good Job	39	33.6	22	19.0
	To have good work in my				
	future				
	I Want Money				
	I'll Get Money				
	Earn a lot of money				
	To have a good future profession,				
	career or goal				

Table 9 (Continued)

		Females		Males	
Concept	Sample Responses	No.	%	No.	%
	I want to become a doctor To be a lawyer I want to have Good Future				
School	I want to Graduate from High school To get a High School Diploma To study/to learn/to be educated in school I like my Teachers I want to be like my teacher Sports or extra curricular activity (drama, theatre, art)	32	27.6	37	31.9

A slightly higher number of females (37) than males (32) wrote that they stayed in school because they wanted to earn a high school diploma. Among those that cited school, the most prevalent motivating factor was finishing high school or earning a high school diploma. The fact that students cite school itself as a motivator for staying in school appears tautological, but it indicates that the students who value a high school diploma and what it represents are more likely to stay in school.

Interestingly, contrary to popular belief, very few students either males (4) or females (3) answered that sports were a motivating factor. While not a central focus of my study, the open-ended question allowed the participants to express one more bit of information, what motivates them to stay in school. If teachers are aware of the factors students perceive as motivating them to stay in school, they can create better learning environments that will increase student motivation (Litchfield et al., 1998). The factors that keep students from dropping out also impact the students' motivation for learning and succeeding in school.

Teacher's Perceptions vs. Students' Perceptions

Research Question #1

The objective for this study was to determine if a difference exists between teachers' and students' perceptions about motivation in Algebra I class. It was hypothesized that a difference exists between teachers' and their students' perceptions about motivation as reported in the motivation section of the MSLQ.

All 116 students were ranked in descending order according to their Algebra I semester grades. Thirty three percent from the top were grouped as the high achievers (HA) group (n = 38) and the 33% (n = 38) from the bottom were grouped as the low achievers (LA) group. CIs were calculated for both the students in HA and LA groups and their teachers on the six subscales in the motivation section of the MSLQ. Therefore, a Bonferroni correction was calculated and the new critical value was calculated as .008.

High Achievers (HA) Group

For the HA group CIs compared the means of each of the six subscales as reported by the teachers and the means of scores of each of the six subscales as reported by the students in the HA group with a critical value of .05. Error bars analysis indicates that the means are significantly different in 1) Intrinsic Goal Orientation, 2) Task Value, and 3) Self-efficacy (see Figure 1). An independent *t*-test was also used to calculate the means of the scores for the teachers and the students in each of the six subscales. The following statistics are for the Intrinsic Goal Orientation, Task Value and Self-efficacy. For Intrinsic Goal Orientation the teachers' mean ($m = 5.36$, $SD = 1.24$) was significantly different ($p < .0001$) from the means of the HA students ($m = 4.24$, $SD = 1.45$). For Task Value the teachers' mean (m = 5.82, SD = 1.28) and the Self-efficacy (m = 5.82, SD = 1.30) differences were also noted (see Table 10). Thus, in the HA group students' reported levels of intrinsic motivation, task value and self-efficacy are significantly greater than what their teachers perceived them to be.

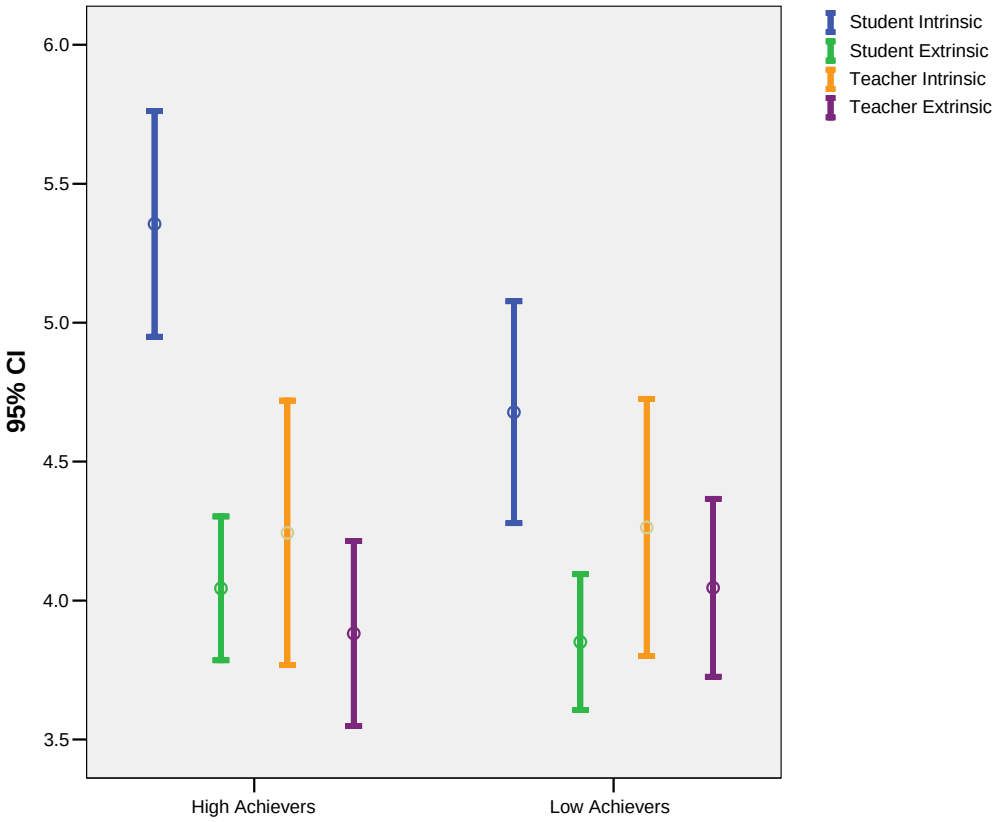

Figure 1. Differences of Students' and Teachers' Intrinsic and Extrinsic Motivation by High Achievers (HA) and Low Achievers (LA) Groups

Table 10
Independent t-test for Teachers' and Students' Perceptions of Three Subscales of Motivation (HA Group)

		M	N	SD	SEM	df	t	Sig. (2-tailed)
Pair	Teacher intrinsic	4.24	38	1.45	0.23	37	3.88	0.0004
1	Student intrinsic	5.36	38	1.24	0.20			
Pair	Teacher Task Value	4.86	38	0.86	0.14	37	4.51	6.3434
2	Student Task Value	5.82	38	1.28	0.21			
Pair	Teacher Self-efficacy	4.57	38	0.71	0.12	37	5.35	4.8189
3	Student Self-efficacy	5.82	38	1.30	0.21			

Low Achievers (LA) Group

For the LA group CIs compared the means of each of the six subscales as reported by the teachers and the means of scores of each of the six subscales as reported by the students in this group with a critical value of set .05. CIs indicate that the means are significantly different in only one subscale, Task Value (see Figure 2). An independent *t*-test was also used to calculate the means of the scores for teachers in the six subscales. For Task Value the teachers' mean (m = 4.66, SD = .59) (see Table 11) was different from the students' means (m = 5.24, SD = 1.01) in the LA group. Thus, in the LA group only the students' reported levels of task value are greater than what their teachers perceive it to be. In the Control of Learning and Test Anxiety no significant difference is noted (see Figure 3).

Table 11
Independent t-test for Teachers' Perceptions and Students' Perceptions of Task Value (LA Group)

	Subscales	M	N	SD	SEM	t	df	Sig. (2-tailed)
Pair 1	Teachers' Task Value	4.66	38	0.59	0.10	2.75	37	0.009
	Students' Task Value	5.24	38	1.01	0.16			

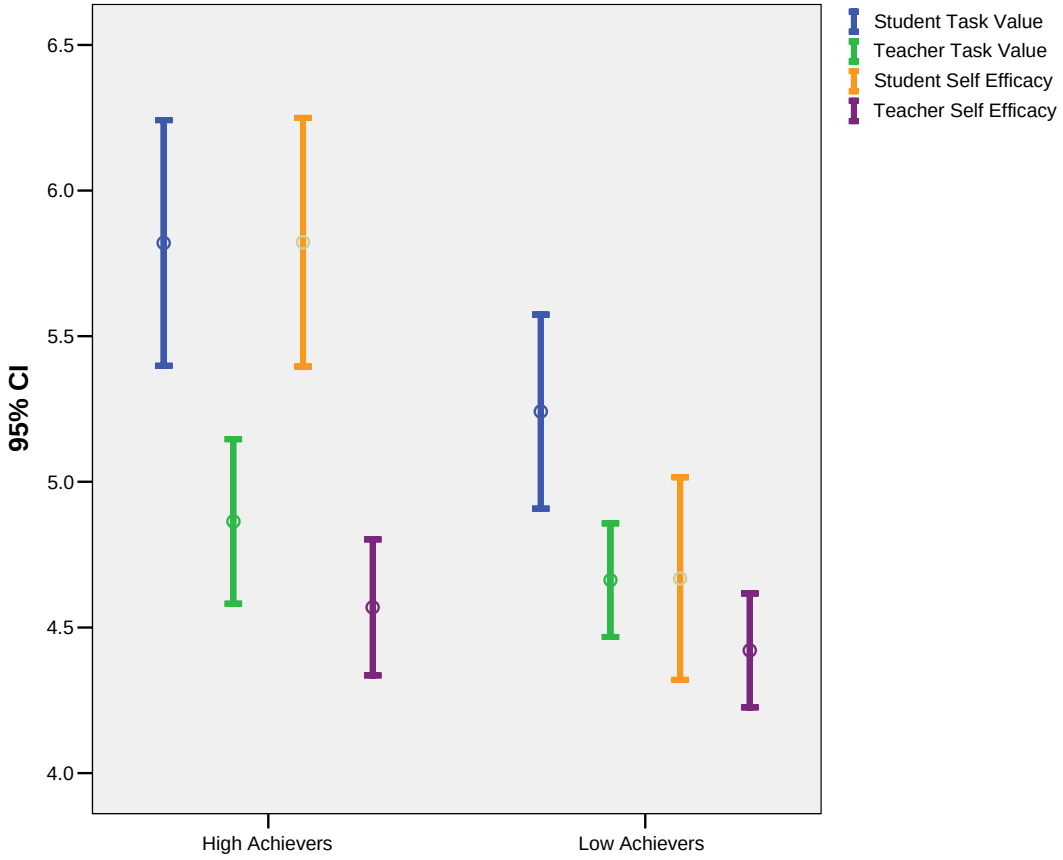

Figure 2. Differences of Students' and Teachers' Task Value and Self-Efficacy By High Achievers (HA) and Low Achievers (LA) Groups

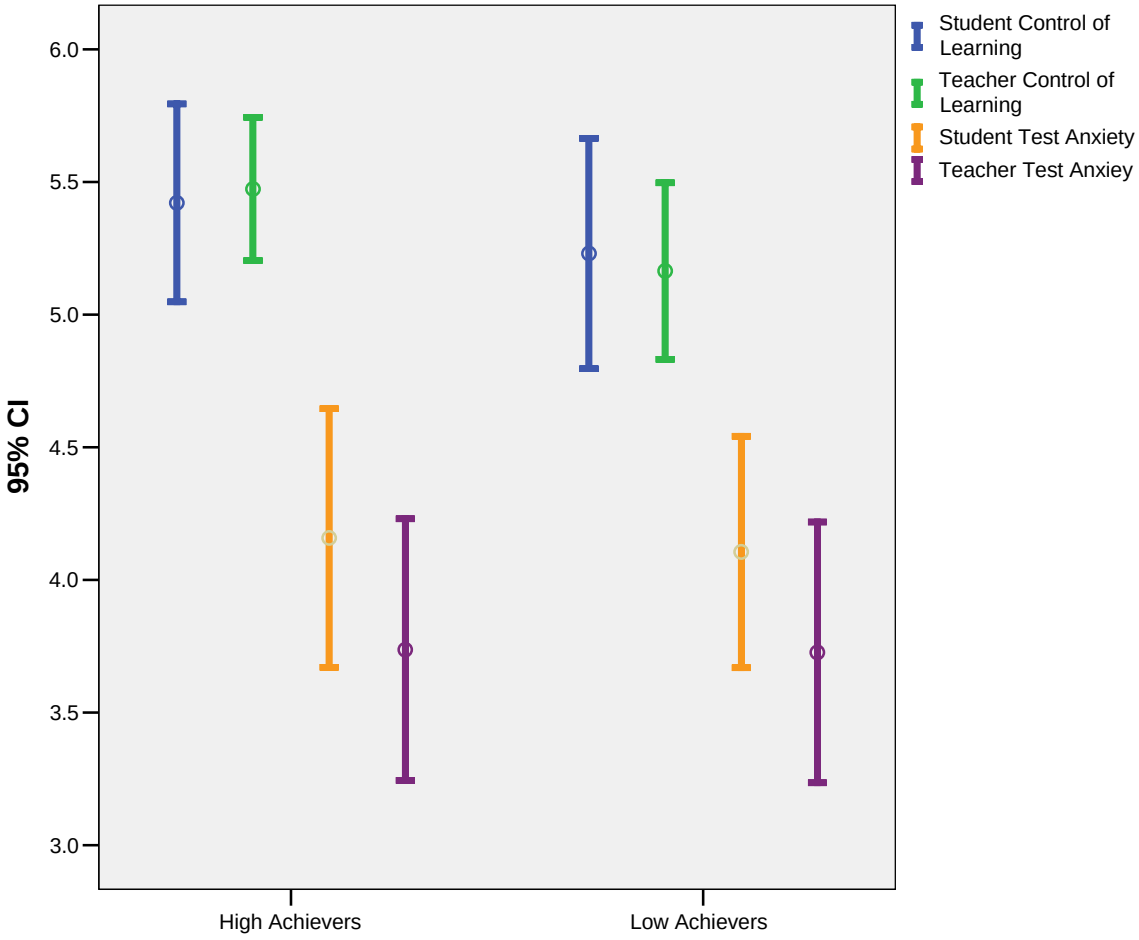

Figure 3. Differences of Students' and Teachers' Control of Learning and Test Anxiety by High Achievers (HA) and Low Achievers (LA) Groups

A comparison between the nine participating teachers using CIs of the six subscales in the motivation section of the MSLQ (shown in Figure 4) was also done. Even though the sample number of teachers was low (N = 9) this analysis provided results of how these teachers perceive their students' motivation in each of the six subscales. This comparison was conducted to examine whether the teachers share the same perceptions of motivating factors. Significant differences in some of the subscales are noted between several of the teachers. In the Self-efficacy subscale, there is a significant difference between Teacher #1 and Teacher #3 and between Teacher #3 and Teacher #4. For the Intrinsic subscale, Teacher #1 differs from Teachers # 3 and #4 and they in turn are significantly different from Teachers #6, #7, and #8. For Control of Learning Teacher #1 is significantly different from Teachers #6 and #7. These two teachers are different from Teacher #3. For Test Anxiety Teacher #1 is significantly different from Teacher #3 and #8. The Extrinsic and the Task Value subscales showed no significant differences.

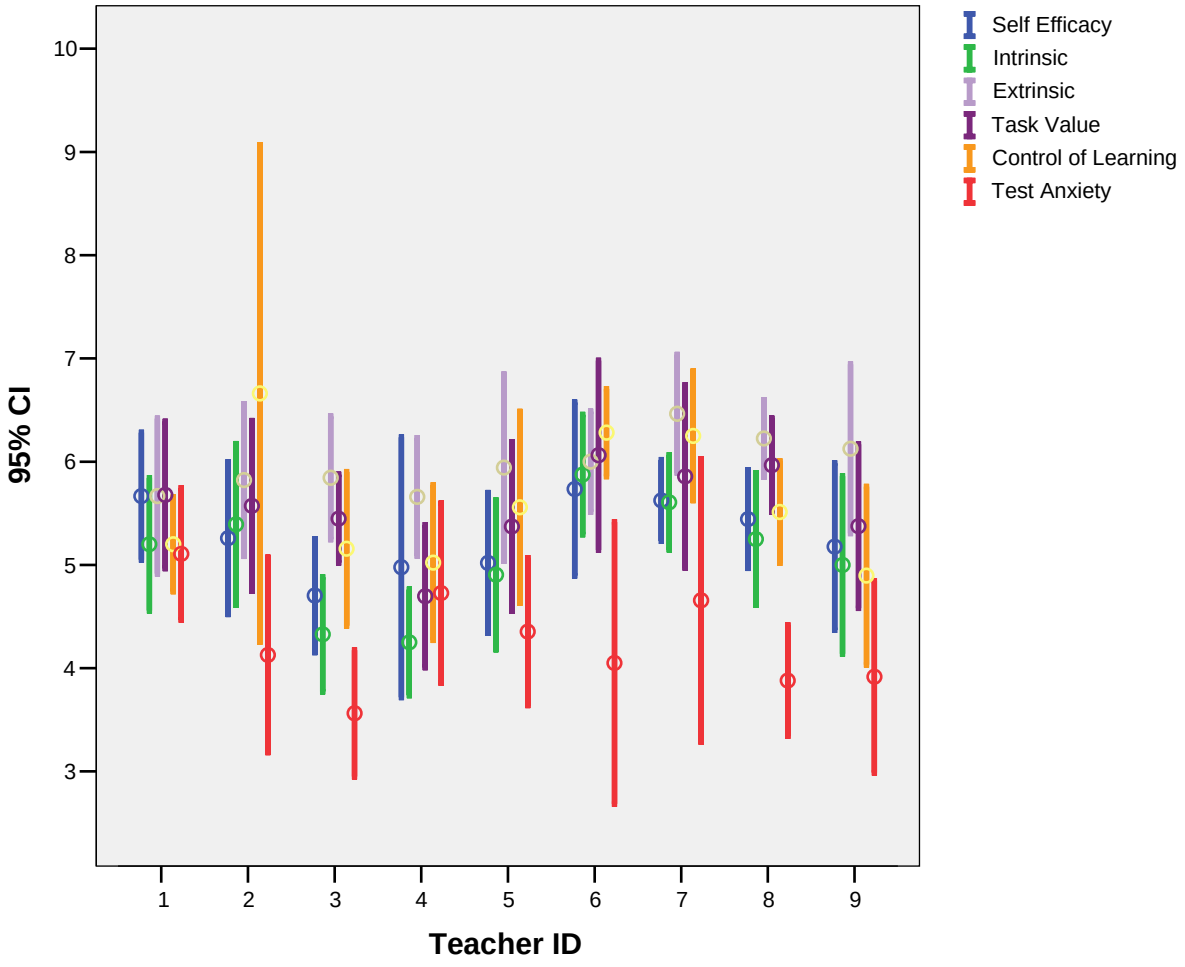

Figure 4. Perceptions of Student Motivation Between Teachers

Gender Effects on Motivation

Research Question #2

One of the study's goals was to determine if there is a significant difference between what males enrolled in high school Algebra I say motivates them and what females say motivates them. Confidence Intervals of the self-reported motivation in the MSLQ scores between female and male participants were calculated with a critical value of .05. The results are graphically summarized in Figure 5. Results show that there is no significant difference in the means of scores for females and males in any of the subscales of the motivation section of the MSLQ. Nonetheless, males in this study show a moderately lower but not significantly lower average for test anxiety than do females. However, a lower score in test anxiety means that the students perceive lower test anxiety (Pintrich et al., 1991). Thus, in this sample males reported moderately less test anxiety than their female classmates. Additionally, a closer analysis within each gender shows that there is a greater significant difference in the subscales within the groups than between them. For example, both show a higher score for the extrinsic than for the intrinsic subscale.

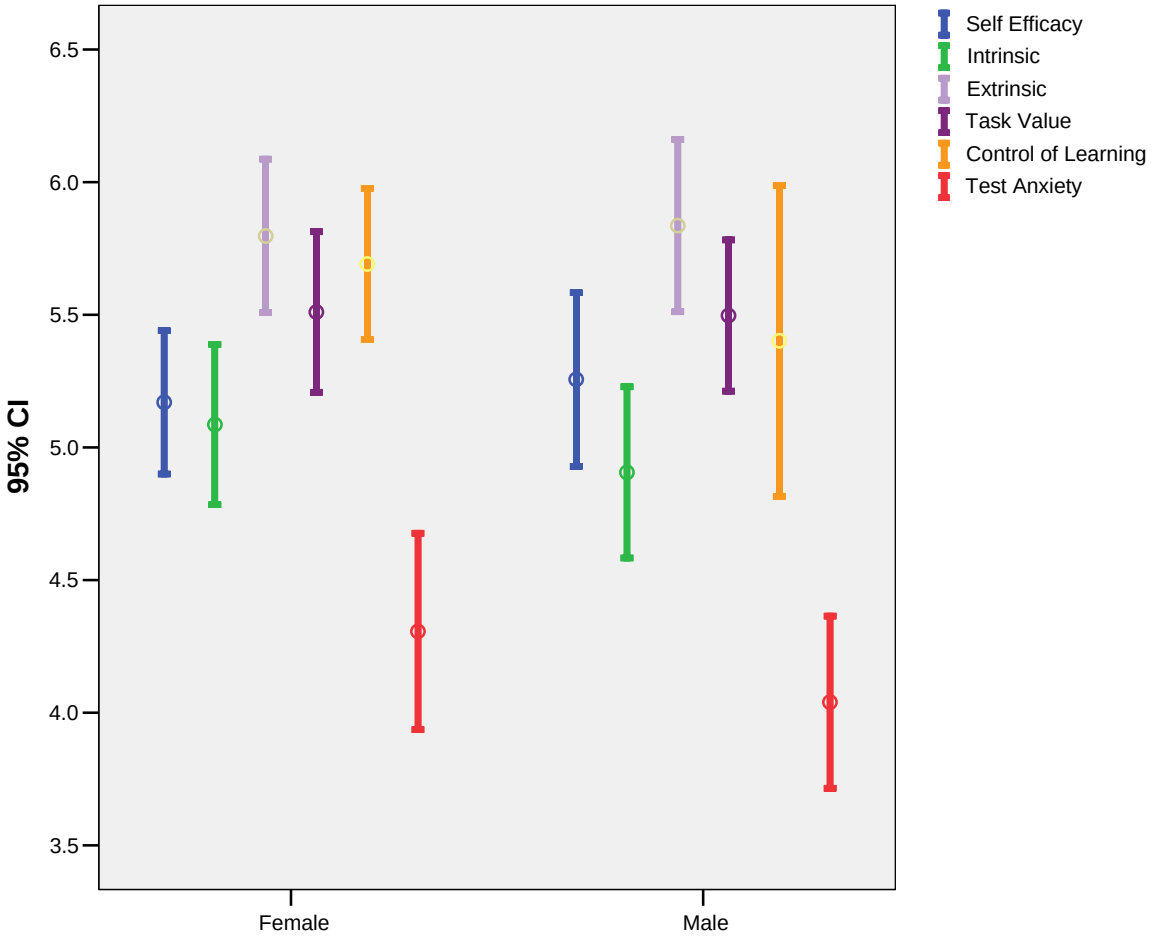

Figure 5. Gender Effects on Motivation

Semester Grades and Gender Differences

Research Question #3

The study investigated to what extent, if any, gender plays a role in achievement as indicated by semester grades for high school students enrolled in Algebra I. With a critical value set at .05 the analysis of error bars (shown in Figure 6) indicate with a CI = 95% that gender does not play a role in the achievement of the participants in this study. An independent samples *t*-test was calculated comparing the semester grades between female (m = 76.38, SD = 16.12) and male (M = 74.05, SD = 19.40) participants (see Table 12).

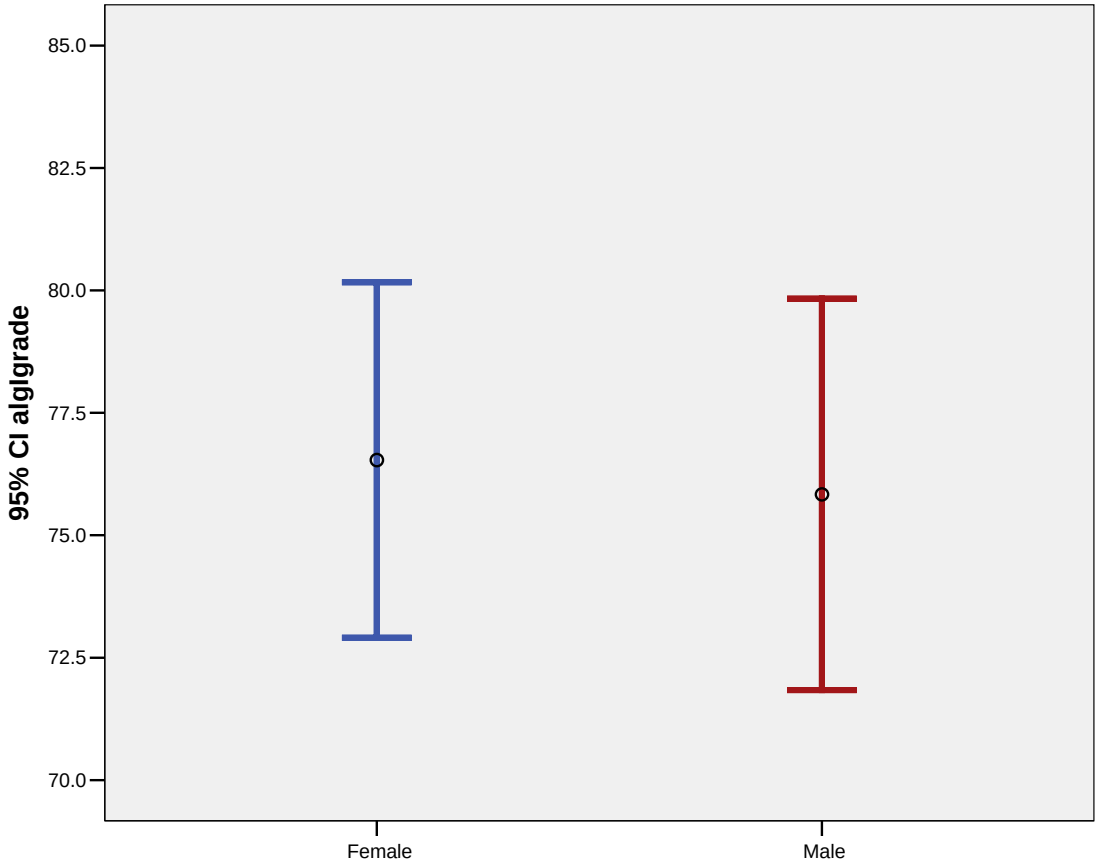

Figure 6. Semester Grades and Gender Differences

Table 12
Means of Semester Grades by Gender

	Gender	N	M	SD	SEM	d	Sig.
Semester Grade	Female	56	76.54	13.55	1.81	.05	.38
	Male	60	75.83	15.47	2.00		

Motivation and Semester Grades

Research Question #4

The study also investigated if there exists a significant relationship between students' self-reported level of motivation to learn in Algebra I class and their achievement as indicated by their semester grades. It was hypothesized that students with a higher self-reported level of motivation as reported on the MSLQ would earn higher semester grades. A linear regression was calculated to see if mean scores on the motivation section of the MSLQ could predict semester grades. The results indicate a positive linear regression between reported motivation and semester grades. The results are summarized in Tables 13 and 14. Thus, for the participants in this study the higher the mean of the self-reported motivation section of the MSLQ the higher the semester grade (see Figure 7). The regression equation was statistically significant $F\ (1, 114) = 7.11$, $p = .01$, with an adjusted $r^2 = 0.0$.

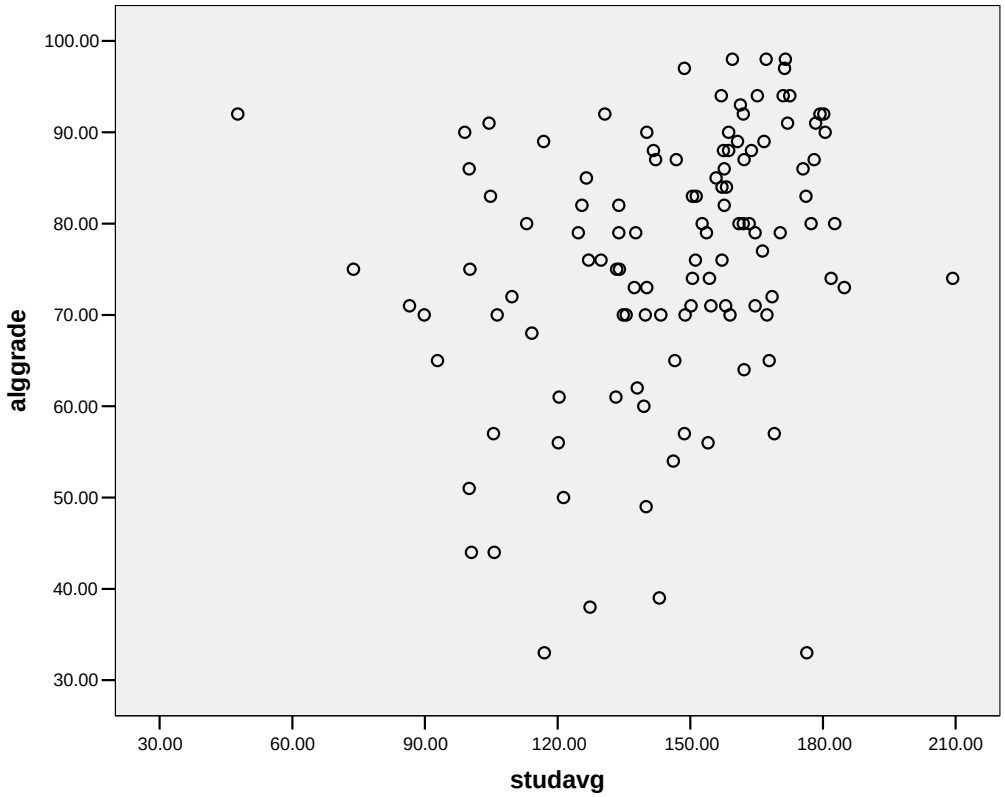

Figure 7. Linear Regression of Motivation Mean Score on MSLQ and Semester Grades

Table 13
Means of MSLQ Scores and Semester Grades

Model	R	R^2	Adjusted R Square	Std. Error of the Estimate	p
1	.24	.06	.05	14.15	0.01

Table 14
ANOVA Results of Linear Regression Model for Means of Semester Grades and MSLQ Scores

Model		Sum of Squares	df	M^2	F	Sig.
1	Regression	1421.89	1	1421.89	7.11	.009(a)
	Residual	22808.66	114	200.076		
	Total	24230.55	115			

a. Predictors: (Constant), Motivation score on MSLQ
b. Dependent Variable: Algebra Semester score

A linear regression was calculated to see if mean scores of any of the six subscales of the motivation section of the MSLQ could predict semester grades. The results indicate a positive linear regression between semester grades and reported motivation on three of the six subscales, Intrinsic Goal Orientation, Task Value, and Self-Efficacy (see Figures 8, 9, and 10). The results indicate that the regression equations were significant in Intrinsic Goal Orientation F (1, 114) = 7.11, p = .009, with

an adjusted r^2 = .07; Task Value *F* (1,114) = 4.59, p = .03, with an adjusted r^2 = .03; and Self-efficacy *F* (1,114) = 19.54, p = 0.00, with an adjusted r^2 = .14 (see Tables 15 and 16). Thus, for participants in this study the higher the mean score on Intrinsic Goal Orientation, Task Value, and Self-efficacy subscales of the MSLQ the higher the Algebra I semester grade.

Table 15
Means of MSLQ Scores and Semester Grades

Model	R	R^2	Adjusted R Square	Std. Error of the Estimate	*p*
Intrinsic	.26	.07	.06	14.07	.005
Extrinsic	.11	.01	.00	14.49	.231
Task Value	.20	.04	.03	14.29	.034
Control of Learning	.08	.01	.00	14.534	.401
Self-Efficacy	.38	.15	.14	13.47	2.257
Test Anxiety	.08	.01	.00	14.53	.404

Table 16
ANOVA Results of Linear Regression Model for Means of Semester Grades and MSLQ Scores

Model		Sum of Squares	df	Mean Square	F	Sig.
Intrinsic	Regression	1659.32	1	1659.32	8.38	.005[a]
	Residual	22571.23	114	197.99		
	Total	24230.55	115			
Task Value	Regression	937.61	1	937.61	4.59	.034[a]
	Residual	23292.94	114	204.32		
	Total	24230.55	115			
Self-efficacy	Regression	3545.75	1	3545.75	19.54	2.257
	Residual	20684.81	114	181.45		
	Total	24230.55	115			

c. Predictors: (Constant), Mean scores on Intrinsic, Task Value, and Self-efficacy of the motivation section of the MSLQ
d. Dependent Variable: Algebra Semester score

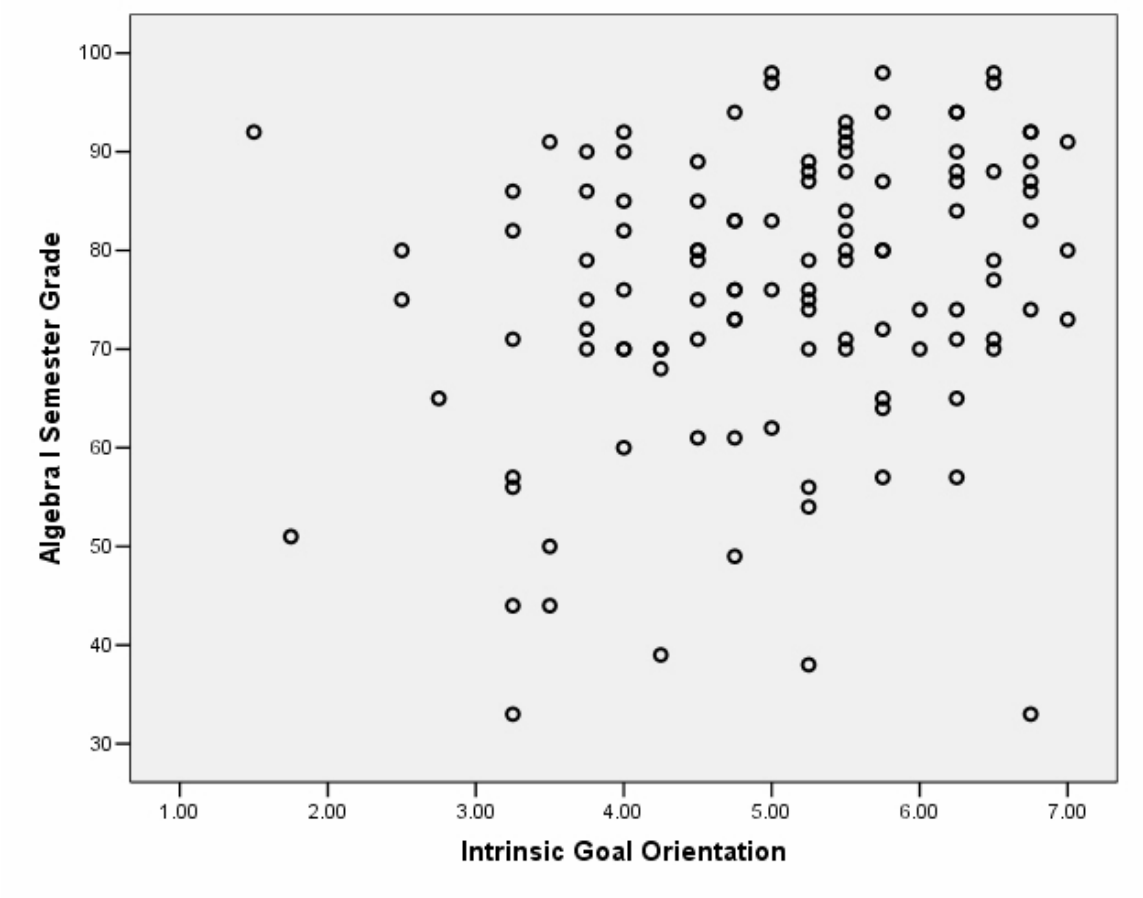

Figure 8. Linear Regression of Intrinsic Goal Orientation Mean Scores and Semester Grades

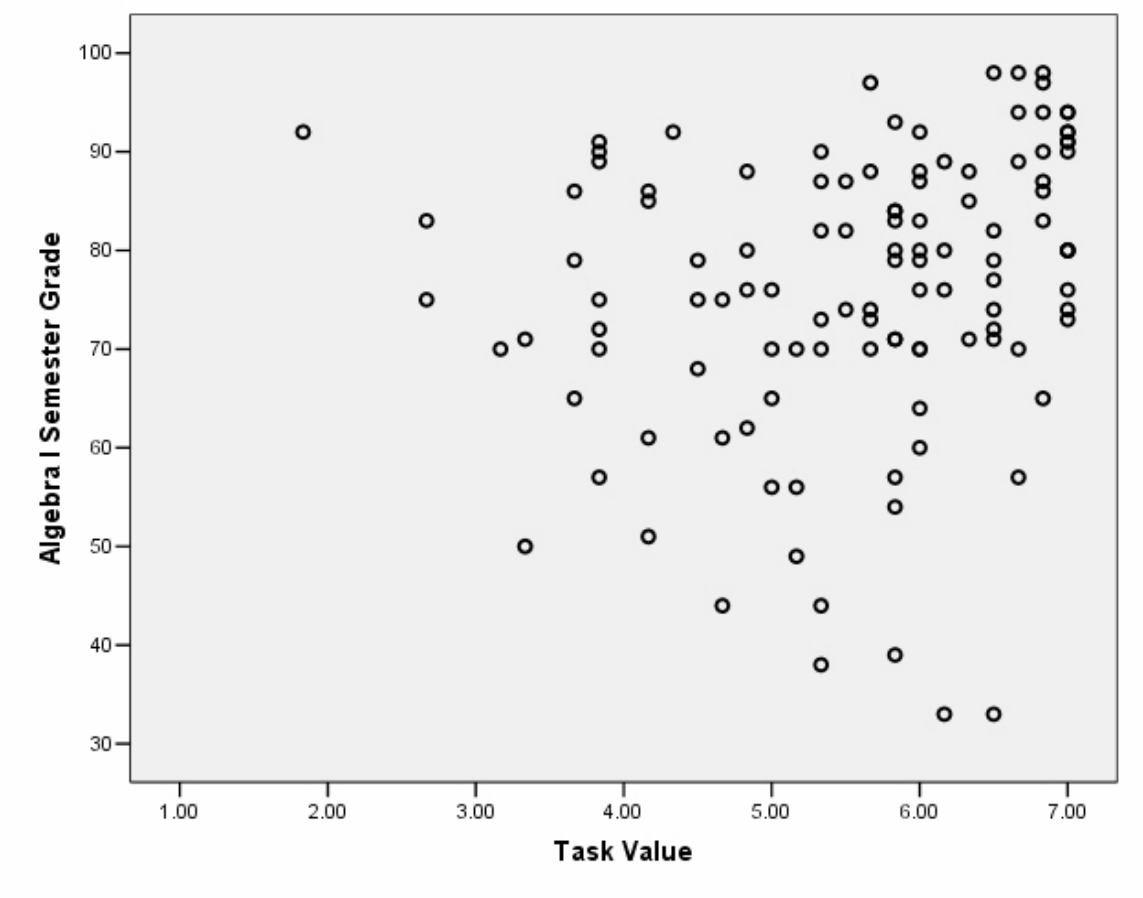

Figure 9. Linear Regression of Task Value Mean Scores and Semester Grades

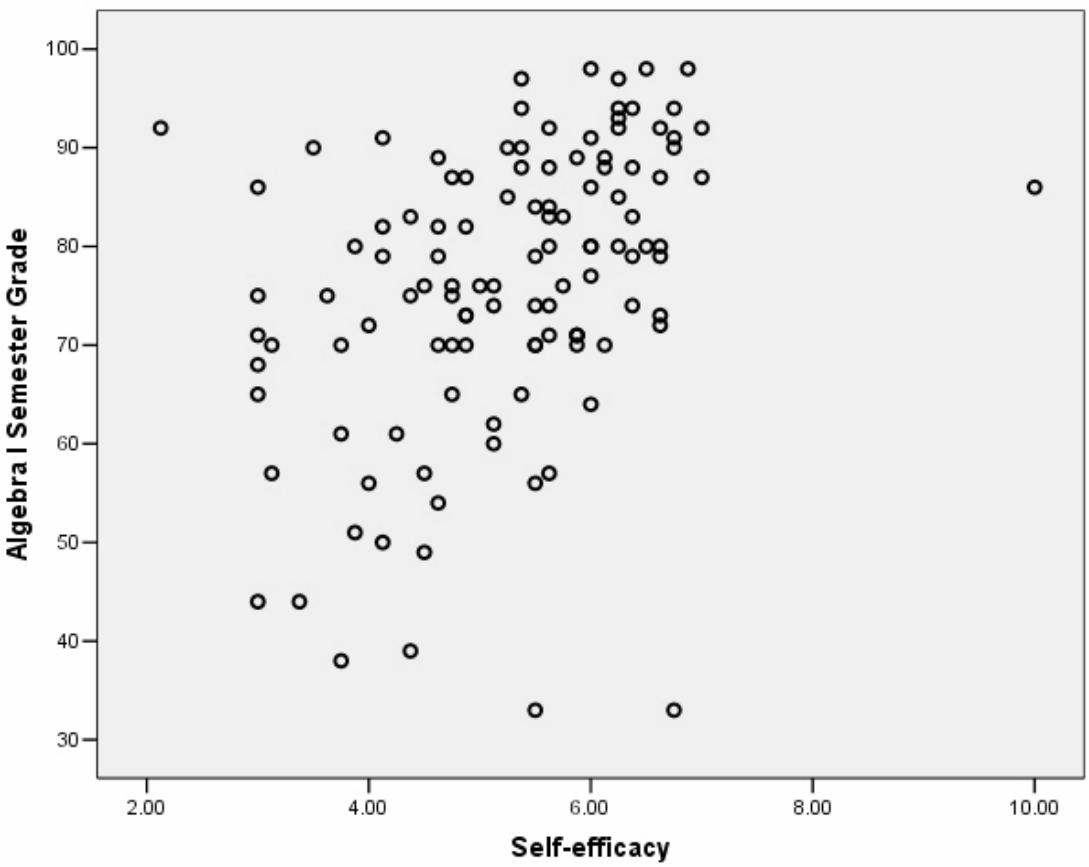

Figure 10. Linear Regression of Self-efficacy Mean Scores and Semester Grades

Analysis of the scatter plots for intrinsic goal orientation, task value and self-efficacy and Algebra I semester grades reveal that Figure 8 (Intrinsic vs. semester grades) while statistically significant the plot seems non linear. This is true especially when comparing it to Figure 10 (self-efficacy vs. semester grades). It is evident that participating students place a higher value on self-efficacy in their Algebra I class than their orientation toward intrinsically motivated factors. It suggests that students expect to

be do well in performing the tasks and are confident in their ability to master the tasks while being self-assured that they are able to be successful.

A correlation matrix was calculated between items in each of the six subscales to see if Algebra I semester grade was influenced by a subscale. Table 17 shows the Pearson correlations for the HA group and the six subscales as well as the Algebra I semester grade. Table 18 shows the Pearson correlations for the LA group and the six subscales of the motivation section of the MSLQ and the Algebra I semester grade.

Table 17 and 18 illustrate that when compared to the LA group the HA group shows a stronger positive correlation on the intrinsic subscale. This may suggest that students in the HA are more intrinsically motivated than students in the LA group. Intrinsically motivated students achieve higher grades (Deci et al., (2001a). Interestingly, the correlation data also suggest the same is true for the extrinsic subscale, where the HA group may be more extrinsically motivated than the LA group. This is contrary to research that suggests that extrinsic motivation undermines learning for the sake of learning rather than encourage it (The Institute for the Learning of Sciences, 1994; Kohn, 1994; Lumsden, 1994; Dev, 1997).

Table 17
Pearson Correlations Matrix for HA Group for Six Subscales in Motivation Section of MSLQ (n=38)

	Intrinsic	Extrinsic	Task Value	C of L[+]	Self-efficacy	Test Anxiety	Alg. I Grade
Intrinsic	1	.77(**)	.86(**)	.72(**)	.51(**)	.29	.15
Extrinsic	.77(**)	1	.84(**)	.67(**)	.56(**)	.40(*)	.08
Task Value	.86(**)	.84(**)	1	.79(**)	.62(**)	.36(*)	.31
Cof L[+]	.72(**)	.67(**)	.79(**)	1	.45(**)	.31	.16
Self-efficacy	.51(**)	.56(**)	.60(**)	.45(**)	1	.18	.08
Test Anxiety	.29	.40(*)	.36(*)	.31	.18	1	.01
Alg. I Grade	.15	.08	.31	.16	.08	.01	1

**Correlation is significant at the 0.01 level (2-tailed);
*Correlation is significant at 0.05 level (2-tailed)
[+]CofL=Control of Learning Beliefs

Table 18
Pearson Correlations Matrix for LA Group for Six Subscales in Motivation Section of MSLQ (n=38)

	Intrinsic	Extrinsic	Task Value	C of L[+]	Self-efficacy	Test Anxiety	Alg I Grade
Intrinsic	1	.53(**)	.67(**)	.66(**)	.71(**)	.24	.20
Extrinsic	.53(**)	1	.50(**)	.67(**)	.46(**)	.18	-.001
Task Value	.67(**)	.50(**)	1	.47(**)	.78(**)	.16	-.07
C of L[+]	.66(**)	.67(**)	.47(**)	1	.49(**)	.45(**)	.18
Self-efficacy	.71(**)	.46(**)	.78(**)	.49(**)	1	.22	.11
Test Anxiety	.24	.18	.16	.45(**)	.22	1	.19
Alg. I Grade	.20	-.001	-.07	.18	.11	.19	1

**Correlation is significant at the 0.01 level (2-tailed);
*Correlation is significant at 0.05 level (2-tailed)
[+]CofL=Control of Learning

CHAPTER V

CONCLUSION

The major purpose of this study was to examine teachers' notions of their students' motivational beliefs. The goals of this study were (1) to determine if a significant difference exists between teachers' perceptions and their students' perceptions about motivation in an Algebra I class, (2) to determine if there is a significant difference between what males enrolled in high school Algebra I say motivates them and what females enrolled in the same class say motivates them, (3) to determine to what extent, if any, gender plays a role in determining success on the Algebra I semester grades for high school students and (4) to determine if a significant relationship exists between a student's reported level of motivation to learn in an Algebra I class and their semester grades in their Algebra I class.

Research Question One

This study set out to determine if a difference exists between teachers' perceptions and their students' perceptions about motivation in Algebra I class. The sample was divided into either the HA group or the LA group. Students were placed in the HA if they landed in the upper 33% of the sample after all students were ranked in descending order. In like manner, the LA group was formed by students that were in the bottom 33% of the rank order of all students.

High Achievers (HA) Group

Confidence Intervals were used as the tool to compare the means of each of the six subscales as reported by the teachers and the means of the six subscales as reported

by the students in the HA group. Significance was found in three of the six subscales of the MSLQ. In comparing teachers and students in the HA group significance was found in intrinsic motivation, task value and self-efficacy. The results illustrate through CIs that students reported that they are learning for learning sake, that they value and are interested in the tasks presented, and more importantly, students believe that they have capabilities to achieve in this course. These findings indicate that HA students are intrinsically motivated, are interested in the course and find it important, and believe in their ability to master the tasks. However, despite the disparity that is shown between students and teachers, these students are achieving in the course. These findings coincide with findings from other studies (Middleton, 1992; Litchfield et al., 1998) where teachers appear to have no notion of what their students' motives for learning are.

Low Achievers (LA) Group

For the LA group error bars compared the means of each of the six subscales as reported by the teachers and the means of scores of each of the six subscales as reported by the student in the LA group. In the LA group the students' reported levels of task value were shown to be greater than what their teachers perceive them to be. This is an important finding since task value takes into account what the student thinks about the task at hand. More importantly, high task value "leads to more involvement in learning" (Pintrich et al., 1991, p. 11). A classroom of students with high task value should provide the teacher with great opportunities for student learning. If students have a higher task value than what their teachers perceive them to have is an unfortunate

situation for the students because they may not be encouraged to become involved in their own learning.

Stipek et al. (1998) found that traditional teachers who use a text-base approach to teaching have a negative effect on students' motivation and the assessment of their students' motivation did not correlated with their students' in any of the seven motivation factors measured. These findings suggest that participating teachers may be implementing traditional teaching strategies and may fail to notice what motivates their students. It is important that teachers' notion of what motivates students and what students perceive as motivating factors be congruent (Litchfield et al., 1998).

An analysis of error bars was conducted to compare perceived notions between all participating teachers. Results indicate that in general there are significant differences between teachers in some of the subscales. An examination of the Self-efficacy subscale revealed significant differences. Teacher #1 was significantly different from Teacher #3. On the Intrinsic subscale Teacher #1 differs from Teachers #3 and #4. A major difference was noted between Teachers 4 and 8 also on the intrinsic subscale. A disparity in the Test Anxiety subscale was observed between Teacher #1 and Teachers #3 and #8. Teachers' years of experience and/or different teaching strategies or models may account for the differences between the teachers. These differences between teachers and more specifically between teachers and their students warrant further research.

It is important to note that differences exist between students and teachers' perceptions of motivating factors. However, it is more important to take notice of the reason why the differences exist. According to Gonzalez et al. (1993),

> . . . educational institutions do not view working-class minority students as emerging from households rich in social and intellectual resources. Rather than focusing on the knowledge these students bring to school and using it as a foundation for learning, schools have emphasized what these students lack in terms of the forms of language and knowledge sanctioned by the schools. This emphasis on so-called disadvantages has provided justification for lowered academic expectations and inaccurate portrayals of these children and their families (p. 3).

This may very well be the reason why teachers' perceptions are significantly different from their own students' perceptions of what motivates them.

Research Question Two

One of this study's goals was to determine if there is a difference between what males enrolled in high school Algebra I say motivates them and what females say motivates them. Results of this study indicate that gender plays no significant role in the motivation of students in any of the six subscales in the motivation section of the MSLQ. Male and female students were too similar to note any differences. The results; however, are not in accordance with past research (Cerezo Rusillo and Casanova Arias, n.d.; Thibert & Karsenti, 1996), which indicates that gender-related differences exist in motivation of females and males.

It is important to study the motivation of students because that's what drives their learning. Thereby, a look at the differences between what males and females perceive as motivational factors is crucial. Moreover, what contributes to these differences is also worth looking at. Meece, Glienke, and Borg, (2006) assert that parents contribute to gender differences in motivation.

Findings suggest that parent's beliefs that school is important and parental involvement in their children's school activities connected with positive attitudes toward

school (Meece et al., 2006) are important factors that contribute to the positive expectations among Hispanic/Latino students. Nonetheless, a statement that parental involvement in schools may not be important in Hispanic/Latino culture is a very common belief among teachers. Although Hispanic/Latino parents generally agree on the high value of education for their children (Koss-Chioino & Vargas, 1999) the literature suggests that Hispanic/Latino parents may not be as involved as they would like due to factors such as a language barrier or differences in cultural values (Delgado-Gaitan, 1991). According to Ibanez, Jurkovic, Kuperminc, and Perilla (2004) parent involvement in school may provide the form of support that is needed for Hispanic/Latino students to believe they can actually achieve their goals.

Research Question Three

The study investigated to what extent, if any, gender plays a role in success on semester grades for high school students enrolled in Algebra I. Studies have noted that the achievement gap between females and males has not decreased. Although both male and female scores continue to rise according to scores reported in the 2003 National Achievement of Educational Progress (NAEP), gender gaps have not closed. Freeman, (2004) in a report for the U. S. Department of Education including an overview of the educational status of girls and women in the U. S. reports “females have consistently out performed males in reading and writing” (p. 4). Meece et al., (2006) note,

> gender differences in motivation-related beliefs and behaviors continue to follow gender role stereotypes. Boys report stronger ability and interest in mathematics and science, whereas girls have more confidence and interest in language arts and writing (p. 351).

Unlike past stereotypical findings the present study shows no significant difference between gender and semester grades for high school students enrolled in Algebra I. A considerable number of studies have investigated parental beliefs about their children's academic abilities and parent's involvement in school activities (Meece et al., 2006). These not only affect student's choice of activities and beliefs about schooling but also impact their future goals. Thus, "parental behaviors, beliefs, and expectations appear to have an enduring influence on young people's achievement attitudes and behaviors" (Meece et al., 2006, p. 363). In significant cases "parents have come to view themselves as agents capable of changing their child's educational experiences" (González et al., 1993, Conclusion section, para. 2).

These research findings suggest that parents of the students in the present study have high expectations for their children's academic abilities. Thus, females and males show no significant difference in academic achievement in their Algebra I course.

Research Question Four

The study investigated if a statistically significant relationship exists between students self-reported level of motivation to learn in an Algebra I class and their semester grades in class. Students in the study who got higher semester grades also reported high means in motivation subscales. This finding has been further corroborated by studies, which found that MSLQ was highly correlated to students' achievement in school (McClendon, 1996; Barker & Olson, 1999). A study designed to examine predictive validity of school achievement conducted by Pintrich et al. (1991) found that variables in the motivation section of the MSLQ are positively related to achievement.

Hence, there is a positive relationship between the means of scores in the MSLQ and semester grades suggesting that motivated students achieve more.

Participating students reported higher mean scores in three subscales of the motivation section of the MSLQ, intrinsic goal orientation, and self-efficacy and task value. Stevens, Olivarez, Lan & Tallent-Runnels (2004) concur that the beliefs that students possess about motivational factors such as intrinsic goal orientation, self-efficacy or task value predict their mathematics performance, even when those beliefs might not match actual ability.

Limitations of the Study

Even though these results may not be generalized to larger populations, they do offer some important findings. Nonetheless, the study is not without its limitations. Primarily, the study was conducted in a predominately Hispanic/Latino populated school district in south Texas in a town bordering Mexico. The sample included a very high percentage of Hispanic/Latino students with moderate to low Social Economic Status (SES). Caution should be exercised in attempting to generalize the results of this study to other populations. The generalizability of this study may have been affected by the unique culture reflecting the proximity of the school district to Mexico. Things such as language, parents educated in Mexico, amount of parental involvement, and local customs may play a factor in the generalizability of this study (Darder, Torres & Gutierrez, 1997; MacDonald, 2004). Other research studies including this type of sample need to be done.

Secondly, the study focused only on high school freshmen (141) and a very small number of sophomores (7) ranging in ages of 15-17 enrolled in Algebra I courses. Thus, the results of this study may not yield comparable statistics for other high school courses.

Thirdly, different results may have been noted if seniors taking pre-calculus or calculus had been involved in the study. Seniors in high school enrolled in higher-level courses may have different, perhaps higher levels of motivation than freshmen or sophomores. Also, results could have been different if identified special education students had been included as participants.

Lastly, this study is also limited by the dependence on data from participants taking the survey. They may not have been honest in their responses to the questionnaire; or, they may have accurately self-reported some aspects of their motivation, but not all.

Recommendations for Further Research

The important role that teachers play in motivating students of mathematics is a major part of the review of related literature presented in this study. Teachers must be aware of the effects that motivation has on students and compare it to the effects that motivation has on inspiring students to become life-long learners. In addition, teachers of mathematics need to get to know their students well and decide if intrinsic, extrinsic, or a combination of these or other types of motivation is best for individual students. This insight can help teachers to methodically and pedagogically enhance the motivation level of their students. Hidi and Harackiewicz (2000) write that teachers have “to

consider how intrinsic and extrinsic factors can be combined to optimize academic motivation" (p. 152). Hence, it becomes important for future studies to examine why a teacher may develop a specific belief about a student's motivational orientation" (Pelletier et al., 2002, p. 194).

Much research has been done on motivation in general and the many other factors that impact it, but educational research involving Hispanic/Latino samples is rare. These types of studies provide opportunities for researchers in the fields of education and psychology to study motivational constructs as they pertain to this ethnic group. Further research should be conducted including Hispanic/Latino samples with the following items in mind: involve students from all grade levels in high school and from different mathematics classes (e. g. Algebra II, Geometry or a Calculus class and not just Algebra I, involve a larger sample size and use more than one school district. These studies would generate data to provide a more comprehensive description of what Hispanic/Latino students perceive as motivating factors. Thereby, providing teachers with information to help design and implement a more conducive learning environment designed to advance the mathematical achievement of students.

REFERENCES

Alderman, M. K. (2004). *Motivation for achievement: Possibilities for teaching and learning* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Allen, O. K. (1993). *The relationship of interdisciplinary teaching to achievement and motivation in precalculus and physics.* Doctoral dissertation, Texas A&M University, College Station.

American Psychological Association. (2001). Publication manual of the American Psychological Association (5th Ed). Washington, DC: Author.

Ames, R., & Ames, C. (Eds.). (1984). *Research on motivation in education, Volume 1: Student motivation*. Orlando, FL: Academic Press, Inc.

Anderman, L. H., & Midgley, C. (1998). *Motivation and middle school students*. (ERIC Document Reproduction Service No. ED 421 281)

Angus, D. L., & Mirel, J. E. (1997). *Mathematics enrollment and the development of the high school in the U.S. 1910-1994*. Retrieved October 28, 2003, from University of Michigan, News and Information Services web site: http://www.umich.edu/~newsinfo/Releases/1997/Nov97/r111897c.html.

Ascher, C. (1983). Improving the mathematical skills of low achievers. (ERIC Document Reproduction Service No. ED 237 584)

Bainbridge-Frymier, A., & Shulman, G. (1995). What's in it for me? Increasing content relevance to enhance students' motivation. *Communication Education, 44*, 265-274.

Barker, J. R. & Olson, J. P. (1999). *Medical students' learning strategies: Evaluation of first year changes*, Retrieved on March 10, 2006 from: http://www.msstate.edu/Org/MAS/ejour2.html.

Bleeker, M. M. (2002). *Parent's influence on the math and science career plans of adolescents*. Poster presented at the biennial meeting of the Society for Research on Adolescence, New Orleans, LA.

Brophy, J. E. (1986). Teaching and learning mathematics: Where research should be going. *Journal for Research in Mathematics Education, 17*, 323-346.

Cameron, J. (2001). Negative effects of reward on intrinsic motivation—A limited phenomenon: Comment on Deci, Koestner, and Ryan (2001). *Review of Educational Research, 71*, 29-42.

Cameron, J., & Pierce, W. D. (1994). Reinforcement, reward, and intrinsic motivation: A meta-analysis. *Review of Educational Research, 64*, 363-423.

Capraro, M. M. (2006). An introduction to confidence intervals for both statistical estimates and effect sizes. Texas A&M University, College Station.

Capraro, R. M. (2005). Statistical significance, effect size reporting, and confidence intervals: Best reporting strategies. Texas A&M University, College Station.

Carr, M. (Ed.). (1996). *Motivation in Mathematics*. Creskill, NJ: Hampton Press, Inc.

Cerezo Rusillo, A. T., & Casanova Arias, P. F. (n.d). *Gender differences in academic motivation of secondary school students*. Department of Psychology, University of Jaen, Spain.

Christophel, D. (1990). The relationships among teacher immediacy behaviors, student motivation, and learning. *Communication Education, 39*, 335-345.

Christophel, D., & Gorham, J. (1995). A test-retest analysis of student motivation, teacher immediacy, and perceived sources of motivating and demotivation in college classes. *Communications Education, 4*, 292-305.

Condry, J., & Chambers, H. (1978). Intrinsic motivation and the process of learning. In M. R. Lepper & D. Greene (Eds.). *The hidden costs of rewards* (pp. 61-84). Hillsdale, NJ: Laurence Erlbaum Association, Inc.

Cumming, G. & Finch, S. (2005). Inference by eye: Confidence intervals and how to read pictures of data. *American Psychologist, 60*(2), 170-180.

Darder, A., Torres, R. D., & Gutierrez, H. (1997). Latinos and education: A critical reader. Rouledge, NY.

de Charms, R. (1984). Motivation enhancement in educational settings. In R. Ames & C. Ames (Eds.), *Research on motivation in education, Vol. 1: Student motivation*, New York, NY: Academic Press.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychology Bulletin, 125*, 627-688.

Deci, E. L., Koestner, R., & Ryan, R. M. (2001a). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research, 71*(1), 1-27.

Deci, E. L., Koestner, R., & Ryan, R. M. (2001b). The pervasive negative effects of rewards on intrinsic motivation: Response to Cameron (2001b). *Review of Educational Research*, *71*(1), 43-51.

Deitte, J. M., & Howe R. M. (2003). Motivating students to study mathematics. *Mathematics Teacher*, *96*(4), 278-280.

Dekeyrel, A., Dernovish, J., Epperly, A., & McKay, V. (2000). Using motivational strategies to improve academic achievement of middle school students. (ERIC Document Reproduction Service No. ED 443 550)

Delgado-Gaitan, C. (1991). Involving parents in the schools: A process of empowerment. *American. Journal of Education*, *100*, 20-46.

Dev, P. C. (1997). Intrinsic motivation and academic achievement: What does their relationship imply for the classroom teacher? *Remedial and Special Education*, *18*(1), 12-19.

Freeman, C. (2004). Trends in educational equity of girl & women: 2004. U. S. Department of Education National. Center for Education Statistics. NCES 200-016.

George, D., & Mallery, P. (2000). *SPSS for windows step by step: A simple guide and reference* (2nd Ed.). Needham Heights, MA: Allyn and Bacon.

González, N., Moll, L., Floyd-Tenery, M., Rivera, A., Rendon, P., Gonzales, R. et al. (1993). Teacher research on funds of knowledge: Learning from households. *Center for Research on Education, Diversity and Excellence.* NCRCDSLL

Educational Practice Reports. Paper EPR06. Retrieved October 11, 2006 from http://repositories.cdlib.org/crede/ncrcdslleducational/EPR06.

Good, T. L., & Brophy, J. E. (2000). *Looking in classrooms* (8th ed.). New York: Longman.

Gottfried, A. E. (1985). Academic intrinsic motivation in elementary and junior high school students. *Journal of Educational Psychology, 77*, 631-645.

Grouws, D. A., & Lembke, L. O. (1996). Influential factors in students motivation to learn mathematics: The teacher and the classroom culture. In M. Carr, (Ed.), Motivation *in mathematics* (pp. 39-62). Cresskill, NJ: Hampton Press, Inc.

Hancock, D. R. (2000). Impact of verbal praise on college students' time spent on homework. *Journal of Educational Research, 93*(6), 384-390.

Hart, L. E., & Allexsaht-Snider, M. (1996). Sociocultural and motivational contexts of mathematics learning for diverse students. In M. Carr, (Ed.), *Motivation in mathematics*. (p.1-23). Cresskill, NJ: Hampton Press, Inc.

Henderson, R. W., & Landesman, E. M. (1992). Mathematics and middle school students of Mexican descent: The effects of thematically integrated instruction. *National Center for Research on Cultural Diversity and Second Language Learning*. University of California. Santa Cruz.

Hidi, S. (2000). An interest researcher's perspective: The effects of extrinsic and intrinsic factors on motivation. In C. Sansone & J. M. Harackiewicz (Eds.), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance*. (p. 309-339). New York: Academic Press.

Hidi, S., & Harackiewicz, J. M. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research, 70*(2), 151-179.

Hill, J. (2000). Enhancing student motivation. Retrieved October 28, 2003, from http://www.hi.is/~joner/eaps/wh_motia.htm.

Horn, E. D. (1991). *An argument for using intrinsic rather than extrinsic motivation.* (ERIC Document Reproduction Service No. ED 355 036).

Hopkins, G. (2000). How can teachers develop student's motivation—and success: An Education World e interview with Carol Dweck. *Education World*. Retrieved on August 27, 2006 from: http://www.education-world.com/a_curr/curr197.shtml.

Hrabowski, F. A. (2003). Raising minority achievement in science and math. *Educational Leadership, 60*(4), 44-48.

Hunter, M. (1995). *Motivation theory for teachers*. Los Angeles, CA: Corwin Press, Inc.

Ibanez, G. E., Jurkovic, G., Kuperminc, & G. P., Perilla, J. (2004). Cultural attributes and adaptations linked to achievement motivation among Latino adolescents. *Journal of Youth and Adolescence, 33*(6), *559*-570.

Institute for the Learning Sciences (1994). Failure of extrinsic motivation. Retrieved April 15, 2002, from http://www.ils.nwu.edu/e-for-e/nodes/NODE-62-pg.html.

Kloosterman, P. (1997, March). *Assessing student motivation in high school mathematics*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Kloosterman, P. (1998, April). *How hard do you work in mathematics? Motivational profiles of six high school students.* Paper presented at the annual meeting of the American Educational Research Association, 1998, San Diego, CA.

Kohn, A. (1993). *Punish by rewards: Trouble with gold stars, incentive plans, A's, praise, and other bribes*. New York, NY. Houghton Mifflin Co.

Kohn, A. (1994). *The risks of rewards*. (Report No. EDO-PS-94-14). Champaign, IL: University of Illinois at Urbana-Champaign. (ERIC Document Reproduction Service No. ED 376 990)

Koss-Chioino, J. D., & Vargas, L. A. (1999). *Working with Latino youth: Culture, development, and context*, Jossey-Bass.

Lampert, M. (2001). *Teaching problems and the problems of teaching*. Yale University Press, New Haven.

Lashaway-Bokina, N. (2000). Recognizing and nurturing intrinsic motivation: A cautionary tale. *Roeper Review*, *22*(4), 225-228.

Lepper, M. R. (1988). Motivational considerations in the study of instruction. *Cognition and Instruction*, *5*(4), 289-309.

Linnenbrink, E. A., & Pintrich, P. R. (2002). Motivation as an enabler for academic success. *School Psychology Review*, *31*(3), 313-325.

Litchfield, B. C., Newman, E. J., & Wright, M. (1998). Differences in student and teacher perceptions of motivating factors in the classroom environment. *National Forum of Applied Educational Research Journal.* Retrieved July 25, 2006, from http://www.nationalforum.com/Electronic%20Journal%20Volumes/Wright,%20

Margaret%20R.%20Differences%20In%20Student%20and%20Teacher%20Perceptions%20of%20Motivating%20Factors%20In%20The%20Classroom%20Environment.pdf.

Lowman, J. (1990). Promoting motivation and learning. *College Teaching, 38*(4), 136-140.

Luce, R. W. (1990). Motivating the unmotivated. *Innovation Abstracts, 12*(8). Retrieved June 7, 2006, from http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/unmotiva.htm.

Lumsden, L. S. (1994). *Student motivation to learn*. (Report No. EDO-EA-94-7). Washington , DC: Office of Educational Research and Improvement (ED). (ERIC Document Reproduction Service No. ED 370 200).

MacCorquodale, P. (1988). Mexican-American women and mathematics: Participation, aspirations, and achievement. In R. R. Cocking & J. P. Mestre (Eds.), *Linguistic and cultural influences on learning mathematics* (pp. 137-160). Hillsdale, NJ: Erlbaum.

McClendon, R. C. (1996). Motivation and cognition of preservice teachers: MSLQ. *Journal of Instructional Psychology 23*, 216-221.

McCombs, B. L., & Pope, J. E. (1998). *Motivating hard to reach students*. Washington, DC: American Psychological Association. Retrieved April 15, 2002 from http://www.mcrel.org/products/noteworthy/noteworthy/barbaram.asp.

McCombs, B. L. (n.d.). *Understanding the keys to motivation to learn*. Mid-continent Research for Education and Learning (McREL), Retrieved January 28, 2002 from http://www.mcrel.org/pdf/noteworthy/learners_learning_schooling/barbaram.asp.

McDonald, V. (2004). Latino education in the United States: A narrated history from 1513—2000. New York, NY: Palgrave Macmillan.

Mcdougall, W. (2004). The Columbia encyclopedia, (6th Ed.). New York: Columbia University Press.

McMillan, J. H. (2000). Educational research: Fundamentals for the consumer. (3rd Ed.). Addison Wesley Longman: New York.

Meece, J. L., Glienke, B. B., & Burg, S. (2006). Gender and motivation. *Journal of Psychology, 44*(5), 351-373.

Middleton, J. A. (1992). Teachers' vs. students' beliefs regarding intrinsic motivation in the mathematics classroom: A person constructs approach. *Journal for Research in Mathematics Education, 26*, 254-279.

National Achievement of Educational Progress (NAEP) (2003). National Center for Education Statistics. Institute of Education Sciences. U. S. Department of Education.

National Commission on Excellence in Education. (1983). U. S. Department of Education, *A nation at risk: An imperative for educational reform*. Washington, DC.

National Council of Teachers of Mathematics (1989). *Principals and standards for school mathematics*. Restor, VA: Author.

National Research Council (2001). *Adding it up: Helping children learn mathematics*. Kilpatrick, J., Swafford, J. & B. Findell. (Eds.). Mathematics Learning Study Committee, Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.

News Texas Education Agency (2006). *SAT math scores for Texas students rise, reflecting increased years of math study.* Retrieved September 29, 2006 from http://www.tea.state.tx.us/press/satrelease06.pdf.

Nolen, S. (1988). Reasons for studying: Motivational orientations and study strategies. *Cognition and Instruction, 5*, 269-287.

Null, J. W. (2003). Who is responsible for student learning? *Kappa Delta Pi Record, 39*, 101-103.

O'Neil, H. F., Sugrue, B., & Baker, E. L. (1995-1996). Effects of motivational interventions on the national assessment of educational progress of mathematics performance. *Educational Assessment, 3*, 135-157.

Pelletier, L. G., Séguin-Lévesque, C., & Legault, L. (2002). Pressure from above and below as determinants of teachers' motivation and teaching behaviors. *Journal of Educational Psychology*, *94*(1) 186-196.

Perie, M., Grigg, W., and Dion, G. (2005). *The Nation's Report Card: Mathematics 2005* (NCES 2006–453). U.S. Department of Education, National Center for Education Statistics. Washington, D.C.: U.S. Government Printing Office.

Perie, M., & Moran, R. (2005). *NAEP 2004 Trends in academic progress: Three decades of students' performance in reading and mathematics* (NCES 2005-464). U. S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. Washington, DC: Government Printing Office.

Pintrich, P. R., & Schunk, D. H. (1996). *Motivation in education*. Englewood Cliffs, NJ: Prentice Hall.

Pintrich, P. R., & Smith, D. A. F. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational & Psychological Measurement 53*, 801-814.

Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1991). *A manual for the use of the Motivated Strategies Learning Questionnaire (MSLQ).* Ann Arbor: University of Michigan, National Center for Research to Improve Postsecondary Teaching and Learning.

Porter, R. P. (2000). Accountability is overdue: Testing the academic achievement of limited English proficient students. *Applied Measurement in Education, 13*(4), 403-410.

Renchler, R. (1991). School leadership and student motivation. (Report No. EDO-EA-92-4). Washington, DC: Office of Educational Research and Improvement (ED). (ERIC Document Reproduction Service No. ED 346 558)

Renchler, R. (1992). *Student motivation, school culture, and academic achievement: What school leaders can do*. (Report No. EA 023 593). Eugene, OR: University of Oregon. (ERIC Document Reproduction Service No. EA 023 593).

Richmond, V. (1990). Communication in the classroom. *Communication Education*. *39*, 183-196.

Rinni, C. H. (1998). Motivating students is a percentage game. *Phi Delta Kappan, 74*, 620-624.

Slavin, R. E. & Calderón, M. (Eds.). (2001). Effective programs for Latino students. Mahwah, NJ: Lawrence Erlbaum Associates.

Small, R. V. (1997). *Motivation in instructional design*. (ERIC Document Reproduction Service No. ED 409 895).

Stevens, J. H. (2003). *Statement on NAEP 2003 mathematics and reading results*. National Assessment Governing Board. Retrieved on August 3, 2005 from: http://www.nagb.org/release/statement_11_03.html.

Stevens, T., Olivarez, A., Lan, W. Y., & Tallent-Runnels, M. K. (2004). Role of mathematics self-efficacy and motivation in mathematics performance across ethnicity. *The Journal of Educational Research, 97*(4), 208-221.

Stevenson, H. W., Shin-ying, L., Chuanan, C., Lummis, M., Stigler, J., Fan, L., & Ge, F. (1990). Mathematics achievement of children in China and the United States. *Child Development 61*, 1053-66.

Stigler, J., & Perry, M. (1988). Mathematics learning in Japanese, Chinese, and American classrooms. In G. Saxe & M. Gearhart (Eds.), *Children's Mathematics*. San Francisco, CA: Jossey- Bass.

Stipek, D., Givvin, K. B., Salmon, J. M., & MacGyvers, C. L. (1998). Can a teacher intervention improve classroom practices and student motivation in mathematics? *Journal of Experimental Education*, *66*(4), 319-338.

Texas Education Agency (TEA). *AEIS Report (2004-2005)*. Retrieved March 3, 2006, from http://www.tea.state.tx.us.

Texas Education Agency (TEA). (2006). Chapter 111. Texas Essential Knowledge and Skills for Mathematics Subchapter C. High School. Retrieved February 2005 from http://www.tea.state.tx.us/rules/tac/chapter111/index.html.

Thibert, G. & Karsenti, T. P. (1996). Motivation profile of adolescent boys and girls: Gender differences throughout schooling. Paper presented at the annual Conference of the American Educational Research Association, April 1996, San Francisco, CA.

U. S. Department of Education. (2004). *The facts about…Math achievement*. Retrieved July 30, 2006 from http://www.ed.gov/print/nclb/methods/math/math/.html.

Vacha-Haase, T., Nilsson, J. E., Reetz, D. R., Lance, T. S., & Thompson, B. (2000). Reporting practices and APA editorial policies regarding statistical significance and effect size. *Theory & Psychology 10*(3). 413-425.

Wigfield, A., Battle, A., Keller, L. B., & Eccles, J. S. (n.d.). Sex differences in motivation, self-concept, career aspiration and career choice: Implications for cognitive development. In A. V. McGillicudy-De Lisi & R. De Lisi (Eds.), *Biology, sociology, and behavior: The development of sex differences in cognition*. Greenwich, CT: Ablex.

APPENDIX A

STUDENT DEMOGRAPHIC INFORMATION

1. Student ID Number _____
2. Gender (circle one). Male Female
3. What year do you plan to graduate from high school? _____
4. Class level (circle one).
   Freshman Sophomore Junior Senior
5. Ethnic background (circle one)
   Afro-American or Black Asian-American Caucasian Hispanic
   Other
6. Do you work for pay? _____If yes, how many hours per week do you work for pay? _____
7. How many hours a week do you study for this mathematics course? _____
8. Do you have brothers or sisters with college degrees? NO___YES___
   How Many _____
9. Father's level of education: Elementary ___ US ___ Mex
   Secondary ___ US ___ Mex
   College ___ US ___ Mex
10. Mother's level of education: Elementary ___ US ___Mex
    Secondary ___ US ___Mex
    College ___ US ___Mex
11. List all mathematics courses taken this year.
    _____
    _____
12. What motivates you to stay in school?
    _____
    _____

APPENDIX B

STUDENT CONSENT FORM

Rhizomatous Motivational Aspects of Hispanic/Latino High School Students in Regular Programs

I have been asked to participate in a research study about the nature of high school students' perceptions and beliefs about motivation in mathematics class. I was selected to be a possible participant because I am enrolled in an Algebra I course this semester. A total of one hundred fifty (150) students have been asked to participate in this study. The purpose of this study is to examine the nature of the perception of motivating factors among groups of high school students in regular and magnet programs receiving mathematics instruction, between their teachers and other students. In addition, the study will also explore the nature of any statistically significant differences in motivation between these groups.

If I agree to be in this study, I will be asked to complete two questionnaires. This study will only take place during the spring semester. There are no risks associated with this study. There are no significant benefits for participating in the study.

This study is anonymous. School identification numbers will be utilized and names of participants will not be used in any form. The records of this study will be kept private. No identifiers linking me to the study will be included in any sort of report that might be published. Research records will be stored securely and only Elsa C. Ruiz, Principal Investigator, and Dr. Robert M. Capraro, Assistant Professor of Mathematics at Texas A&M University, College Station; will have access to the records. My decision whether or not to participate will not affect my current or future relations with Texas A&M University, Laredo Independent School District or the high school I am attending. If I decide to participate, I am free to refuse to answer any of the questions that may make me uncomfortable. I can withdraw at any time with out my relations with the university, job, benefits, etc., being affected. If I have any questions about this study, I can contact Elsa C. Ruiz, 710 Kearney, Laredo, TX at (956) 724-2269 or at ecruiz@stx.rr.com. I can also contact Dr. Robert Capraro, Assistant Professor of Mathematics Education at TAMU, who will be supervising the research study. He can be reached at (979) 845-8007 or rcapraro@coe.tamu.edu.

This research study has been reviewed by the Institutional Review Board-Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, I can contact the institutional Review Board through Dr. Michael W. Buckley, Director of Research Compliance, Office of Vice President for Research at (979) 845-885 (mwbuckley@tamu.edu).
****

I have read the above information. I have asked questions and have received answers to my satisfaction. I have been given a copy of this consent documentation for my records. By signing this document, I consent to participate in the study.

Signature: _____ Date_____
Signature of Investigator: _____Date: _____

APPENDIX C

PARENT CONSENT FORM

Rhizomatous Motivational Aspects of Hispanic/Latino High School Students
in Regular Programs

I have been asked to participate in a research study about the nature of high school students' perceptions and beliefs about motivation in mathematics class. I was selected to be a possible participant because I am enrolled in a mathematics course this semester. A total of one hundred fifty (150) students have been asked to participate in this study. The purpose of this study is to examine the nature of the perception of motivating factors among groups of high school students in regular and magnet programs receiving mathematics instruction, between their teachers and other students. In addition, the study will also explore the nature of any statistically significant differences in motivation between these groups.

If I agree to be in this study, I will be asked to complete two questionnaires. This study will only take place during the spring semester. There are no risks associated with this study. There are no significant benefits for participating in the study.

This study is anonymous. School identification numbers will be utilized and names of participants will not be used in any form. The records of this study will be kept private. No identifiers linking me to the study will be included in any sort of report that might be published. Research records will be stored securely and only Elsa C. Ruiz, Principal Investigator, and Dr. Robert M. Capraro, Assistant Professor of Mathematics at Texas A&M University, College Station; will have access to the records. My decision whether or not to participate will not affect my current or future relations with Texas A&M University, Laredo Independent School District or the high school I am attending. If I decide to participate, I am free to refuse to answer any of the questions that may make me uncomfortable. I can withdraw at any time with out my relations with the university, job, benefits, etc., being affected. If I have any questions about this study, I can contact Elsa C. Ruiz, 710 Kearney, Laredo, TX at (956) 724-2269 or at ecruiz@stx.rr.com. I can also contact Dr. Robert Capraro, Assistant Professor of Mathematics Education at TAMU, who will be supervising the research study. He can be reached at (979) 845-8007 or rcapraro@coe.tamu.edu.

This research study has been reviewed by the Institutional Review Board-Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, I can contact the institutional Review Board through Dr. Michael W. Buckley, Director of Research Compliance, Office of Vice President for Research at (979) 845-885 (mwbuckley@tamu.edu).
****

I have read the above information. I have asked questions and have received answers to my satisfaction. I have been given a copy of this consent documentation for my records. By signing this document, I consent to participate in the study.

Signature: _____Date: _____

Signature of Investigator: _____Date: _____

APPENDIX D

Parent Consent Form (Spanish Version)

Consentimiento de Padres para la participación de su hijo/hija

Queridos Padres,

Mi nombre es Elsa C. Ruiz. Soy estudiante en el programa de doctorado de la universidad de Texas A&M en College Station. Por la presente les pido su consentimiento para la participación de su hijo/hija en un estudio para determinar aspectos de motivación que los estudiantes de secundaria perciben cuando toman cursos de matemáticas.

Aproximadamente 150 estudiantes participaran y seguirán sus estudios de matemáticas en la que están inscritos. Los participantes recibirán una encuesta a la cual se les pedirá que contesten.

Los participantes no perderán lecciones y sus grados no serán afectados en ninguna forma.

La participación de su hijo/hija será completamente voluntaria. No se le castigara en ninguna forma o manera si usted decide no permitir a su hijo/hija a participar. La escuela, el distrito escolar, Laredo Independent School District, y la universidad. Texas A&M, College Station han aprobado este proyecto.

Toda clase de información se mantendrá anónima. Los nombres de los participantes no serán revelados de ninguna forma y permanecerán anónimos.

Si usted tiene preguntas, comuníquese conmigo. Me pueden llamar al (956) 724-2269. También pueden llamar a Dr. Robert Capraro, Profesor Asistente de Educación de la universidad Texas A&M. Dr. Capraro estará supervisando el proyecto. Su número es (979) 845-8007.

Les agradecería que me regresara esta forma antes del _____, para saber que ustedes se dieron cuenta de esta información.

Sinceramente,

Elsa C. Ruiz
Coordinadora, LISD
Estudiante del Programa del Doctorado
Departamento de Educación
Universidad de Texas A&M, College Station

Nombre del estudiante: _____

_____Yo he leído esta carta y doy permiso a mi hijo/hija que participe en este proyecto.

_____Yo he leído esta carta y no doy permiso a mi hijo/hija que participe en este proyecto.

Firma de Padres_____Fecha_____

Si tienen preguntas sobre sus derechos a cerca de este proyecto favor dedicarlas a la mesa directiva del Institutional Review Board, de la universidad Texas A&M, (979) 845-8585. Requisitos institucionales y el gobierno federal gobiernan todos los proyectos de investigación que se llevan acabo por los investigadores de TAMU.

APPENDIX E

Teacher's Motivated Strategies for Learning Questionnaire—MSLQ

TEACHER: Motivated Strategies for Learning Questionnaire—MSLQ		
The following questions ask about your students' motivation for and attitudes about this class. Use the scale below to answer the questions. If you think the statement is very true of your students circle the number 7 and if a statement is not true of your students, circle the number 1. If the statement is more or less true of your students, fins the number between 1 and 7 that best describes your students.		
1	In a class like this, my students prefer course material that really challenges them so they can learn new things.	1 2 3 4 5 6 7 Not at all true — Very True
2	If my students study in appropriate ways, then they will be able to learn the material in this course.	1 2 3 4 5 6 7 Not at all true — Very True
3	When my students take a test they think about how poorly they are doing compared with other students.	1 2 3 4 5 6 7 Not at all true — Very True
4	I think my students will be able to use what they learn in this course in other courses.	1 2 3 4 5 6 7 Not at all true — Very True
5	I believe my students will receive an excellent grade in this class.	1 2 3 4 5 6 7 Not at all true — Very True
6	I'm certain my students can understand the most difficult material presented in the reading for this course.	1 2 3 4 5 6 7 Not at all true — Very True
7	Getting a good grade in this clas is the most satisfying thing for my students right now.	1 2 3 4 5 6 7 Not at all true — Very True
8	When my students take a test they think about items on other parts of the test they can't answer.	1 2 3 4 5 6 7 Not at all true — Very True
9	It is my students' own fault if they don't learn the material in this course.	1 2 3 4 5 6 7 Not at all true — Very True
10	It is important for my students to learn the material in this course.	1 2 3 4 5 6 7 Not at all true — Very True

11	The most important thing for my students right now is improving their overall grade point average, so their main concern in this class is getting a good grade.	1 2 3 4 5 6 7 Not at all true Very True
12	I'm confident my students can learn the basic concepts taught in this course.	1 2 3 4 5 6 7 Not at all true Very True
13	If my students can, they want to get better grades in this class than most other students.	1 2 3 4 5 6 7 Not all true Very True
14	When my students take tests they think of the consequences of failing.	1 2 3 4 5 6 7 Not at all true Very True
15	I'm confident my students can understand the most complex material presented by me in this course.	1 2 3 4 5 6 7 Not at all true Very True
16	In a class like this, my students prefer course material that arouses their curiosity, even if it is difficult to learn.	1 2 3 4 5 6 7 Not at all true Very True
17	My students are very interested in the content area of this course.	1 2 3 4 5 6 7 Not at all true Very True
18	If my students try hard enough, then they will understand the course material.	1 2 3 4 5 6 7 Not at all true Very True
19	My students have an uneasy, upset feeling when they take an exam.	1 2 3 4 5 6 7 Not at all true Very True
20	I'm confident my students can do an excellent job on the assignments and tests in this course.	1 2 3 4 5 6 7 Not at all true Very True
21	I expect my students to do well in this class.	1 2 3 4 5 6 7 Not at all true Very True
22	The most satisfying thing for my students in this course is trying to understand the content as thoroughly as possible.	1 2 3 4 5 6 7 Not at all true Very True
23	I think the course material in this clas is useful for my students to learn.	1 2 3 4 5 6 7 Not at all true Very True
24	When my studnets have the opportunity in this class, they choose	1 2 3 4 5 6 7 Not at Very

	course assignments that they can learn from, even if they are not guarantee a good grade.	all true True
25	If my students don't understand the course material, it is because they didn't try hard enough.	1 2 3 4 5 6 7 Not at all true Very True
26	My students like the subject matter of this course.	1 2 3 4 5 6 7 Not at all true Very True
27	Understanding the subject matter of this course is very important for my students.	1 2 3 4 5 6 7 Not at all true Very True
28	My students feel their heart beating fast when they take an exam.	1 2 3 4 5 6 7 Not at all true Very True
29	My students are certain they can master the skills being taught in this class.	1 2 3 4 5 6 7 Not at all true Very True
30	My students want to do well in this class because it is important for them to show their ability to their family, friends, employer, or others.	1 2 3 4 5 6 7 Not at all true Very True
31	Considering the difficulty of this course and my skills as a teacher, I think my students will do well in this class.	1 2 3 4 5 6 7 Not at all true Very True

APPENDIX F

Student's Motivated Strategies for Learning Questionnaire—MSLQ (English)

STUDENT: Motivated Strategies for Learning Questionnaire—MSLQ		
The following questions ask about your motivation for and attitudes about this class. Remember there are no right or wrong answers; just answer the questions as accurately as possible. Use the scale below to answer the questions. If you think the statement is very true of you, circle the number 7 and if a statement is not at all true of you, circle the number 1. If the statement is more or less true of you, finds the number between 1 and 7 that best describes you.		
1	In a class like this, I prefer course material that really challenges me so I can learn new things.	1 2 3 4 5 6 7 Not at all true — Very True
2	If I study in appropriate ways, then I will be able to learn the material in this course.	1 2 3 4 5 6 7 Not at all true — Very True
3	When I take a test I think about how poorly I am doing compared with other students.	1 2 3 4 5 6 7 Not at all true — Very True
4	I think I will be able to use what I learn in this course in other courses.	1 2 3 4 5 6 7 Not at all true — Very True
5	I believe I will receive an excellent grade in this class.	1 2 3 4 5 6 7 Not at all true — Very True
6	I'm certain I can understand the most difficult material presented in the reading for this course.	1 2 3 4 5 6 7 Not at all true — Very True
7	Getting a good grade in this clas is the most satisfying thing for me right now.	1 2 3 4 5 6 7 Not at all true — Very True
8	When I take a test Ithink about items on other parts of the test I can't answer.	1 2 3 4 5 6 7 Not at all true — Very True
9	It is my own fault if I don't learn the material in this course.	1 2 3 4 5 6 7 Not at all true — Very True
10	It is important for me to learn the material in this course.	1 2 3 4 5 6 7 Not at all true — Very True

11	The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.	1 2 3 4 5 6 7 Not at all true Very True
12	I'm confident I can learn the basic concepts taught in this course.	1 2 3 4 5 6 7 Not at all true Very True
13	If I can, I want to get better grades in this class than most other students.	1 2 3 4 5 6 7 Not at all true Very True
14	When I take tests I think of the consequences of failing.	1 2 3 4 5 6 7 Not at all true Very True
15	I'm confident I can understand the most complex material presented by the instructor in this course.	1 2 3 4 5 6 7 Not at all true Very True
16	In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.	1 2 3 4 5 6 7 Not at all true Very True
17	I am very interested in the content area of this course.	1 2 3 4 5 6 7 Not at all true Very True
18	If I try hard enough, then I will understand the course material.	1 2 3 4 5 6 7 Not at all true Very True
19	I have an uneasy, upset feeling when I take an exam.	1 2 3 4 5 6 7 Not at all true Very True
20	I'm confident I can do an excellent job on the assignments and tests in this course.	1 2 3 4 5 6 7 Not at all true Very True
21	I expect to do well in this class.	1 2 3 4 5 6 7 Not at all true Very True
22	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.	1 2 3 4 5 6 7 Not at all true Very True
23	I think the course material in this clas is useful for me to learn.	1 2 3 4 5 6 7 Not at all true Very True
24	When I have the opportunity in this class, I choose course assignments that I can learn from, even if I am not guarantee a good grade.	1 2 3 4 5 6 7 Not at all true Very True

25	If I don’t understand the course material, it is because I didn’t try hard enough.	1 2 3 4 5 6 7 Not at all true Very True
26	I like the subject matter of this course.	1 2 3 4 5 6 7 Not at all true Very True
27	Understanding the subject matter of this course is very important for me.	1 2 3 4 5 6 7 Not at all true Very True
28	I feel my heart beating fast when I take an exam.	1 2 3 4 5 6 7 Not at all true Very True
29	I am certain I can master the skills being taught in this class.	1 2 3 4 5 6 7 Not at all true Very True
30	I want to do well in this class because it is important for me to show me ability to my family, friends, employer, or others.	1 2 3 4 5 6 7 Not at all true Very True
31	Considering the difficulty of this course, the teacher and my skills, I think I will do well in this class.	1 2 3 4 5 6 7 Not at all true Very True

APPENDIX G

Student's Motivated Strategies for Learning Questionnaire—MSLQ (Translated into Spanish by the Researcher)

ESTUDIANTE: Motivated Strategies for Learning Questionnaire (MSLQ)		
Las sigientes preguntas son a cerca de tu motivación y tus atitudes sobre la clase de matemáticas. Recuerda no hay respuesta correctas ni equivocadas; nada mas contesta las preguntas lo mejor posible. Usa la esquela que se encuentra en cada oracion para escoger tu respuesta. Si tu piensas que la oración repesenta verdaderamente lo que tu piensas de ti, cirula el number 7 y si la oración no reprenta lo que tu piensas de ti entonces circula el numero 1. Sí la oración es mas o menos lo que tu piensas entonces escoge un numero entre el 1 y el 7. Este numero es el que mas te describe a ti mismo.		
1	En la clase de matemáticas, prefiero materia que me hace pensar y poder aprender cosas nuevas.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
2	Si estudio apropiadamente, entonces podre aprender la materia del curso de matemáticas.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
3	Cuando tomo una prueba pienso que estoy haciendo muy mal comparado a otros alumnos en la clase.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
4	Yo pienso que si puedo usar en otros cursos lo que estoy aprendiendo en este curso.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
5	Yo creo que si recibire una calificación eccelente.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
6	Estoy seguro que puedo entender lo mas dificultoso de la materia del curso presentada en las lecciones.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
7	Recibir una buena calificación en esta clase es muy satisfecho para mi ahorita.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
8	Cuando tomo un exam yo pienso en los problemas en otra parte del examen que yo no puedo resolver.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso

9	Es mi culpa si no aprendo la materia del curso.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
10	Es importante para mi aprender la materia del curso.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
11	Lo mas importante para mi ahorita es subir mi promedios. Por eso mi mayor procupación es obtener buenas calificaciones.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
12	Estoy seguro(a) que puedo aprender los conceptos mas basicos del curso.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
13	Si puedo, me gustaria tener mejores calificaciones que mis amigos.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
14	Cuando tomo un exam pienso en las consequencias de fallar el exam.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
15	Tengo confiansa que puedo entender la materia mas complexa presentada por el instructor.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
16	En esta clase, prefiero materia que despierte mi curiosidad, aungue sea difisil para aprender.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
17	Estoy muy interesado(a) en el contenido del curso.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
18	Si trato bastante entonces yo entendere el material del curso.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
19	Cuando tomo un exam no me siento bien.	1 2 3 4 5 6 7 Exacto lo que yo pienso pienso — No lo que yo pienso
20	Estoy seguro(a) que puedo hacer un trabajo ecselente en las tareas y examenes del curso.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso

21	Yo espero hacer bien en esta clase.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
22	Lo que mas me satisfase en este curso es tratar de entender el contenido lo mejor posible.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
23	Yo pienso que la materia de esta clase me es util y la debo de aprender.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
24	Cuando tengo la oportunidad en esta clase, yo escojo trabajos que me permiten aprender, aunque no me garantisan un buen grado.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
25	Si no entiendo la materia del curso es porque no he tratado basta.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
26	Me gusta la materia de este curso.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
27	Entender la materia de este curso es muy importante para mi.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
28	Siento mi corazon palpitar rapidamente cuando tomo un exam.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
29	Yo estoy seguro(a) que puedo aprender lo que se enseña en esta clase.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
30	Yo quiero hacer bien en esta clase porque es importante demonstrale mi habilidad a mi familia, amigos, empliados y otros.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso
31	Considerando lo difisil del curso, la maestra or maestro, y mi habilidad, yo creo que si hare bien en esta clase.	1 2 3 4 5 6 7 Exacto lo que yo pienso — No lo que yo pienso

VITA

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Laredo Independent School District
904 Juarez
Laredo, TX 78040

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Education: B.S., Elementary Education with Math specialization; Texas A&I University at Laredo, 1976

M.S., Secondary Education with minor in English, Laredo State University, 1982

Ph. D., Curriculum and Instruction, Texas A&M University, College Station, 2006.