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Academic Achievement in a National Sample: The Contribution of Self-regulation  
and Motivational Beliefs Beyond and Above Parental Involvement

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Paper presented at the annual meeting of the American Educational Research  
Association, April 2005, Montreal, Canada.

Abstract

This study examined the predictive association between gender, ethnicity, and homework parental involvement, self-regulated learning processes, and motivational beliefs among 10th grade high school students. It was predicted that students' motivational beliefs and self-regulatory processes would be significant predictors of students' math academic achievement beyond and above homework parental involvement, gender, and ethnicity of the students. A regression analysis revealed that motivational beliefs and use of self-regulated learning strategies are significant predictors of math standardized test scores beyond and above parental active and reactive homework involvement and the students' gender and ethnic differences. Students who engage in self-regulation are better able to perform on the math standardized test. Implications for instruction are also discussed.

## Academic Achievement in a National Sample: The Contribution of Self-regulation and Motivational Beliefs Beyond and Above Parental Involvement

The ability to use self-regulation of learning strategies among learners could serve as an effective learning strategy useful to diminish the detrimental effect of low motivation on academic performance. Despite the importance of this phenomenon, we still know relatively little about the association between academic achievement and self-regulation of learning and motivation. In this study, by using hierarchical regression analyses, the following research questions are examined: What is the effect of students' engagement in self-regulation of learning and motivational beliefs on their academic performance? Will self-regulation of learning and motivational beliefs account for students' achievement above and beyond their gender, ethnicity, and parental involvement?

Cooper (1989) defines *homework* as a teacher-initiated method for directing students to study more effectively on their own outside of the school. It is usually first assigned during the elementary school years and increases in depth and quantity during subsequent years. Current research indicates that homework generally has positive effects on students' academic outcomes (Cooper 1989; Cooper & Valentine, 2001). Not only does homework serve to convey academic knowledge to students, but it should also prompt them to engage in self-initiated and self-directed studying (Zimmerman, 2000). However, little research has been done to investigate the latter topic, and this study attempts to fill in this gap, focusing specifically on population of at-risk college students.

Zimmerman (1998) recommended investigating the role of self-regulatory processes in successful studying. Zimmerman (1998) defined *self-regulation of learning* as, "self-generated thoughts, feelings, and actions for attaining academic goals" (p. 73). Winne and Hadwin (1997) proposed four self-regulatory stages in homework completion: task definition (perception of the feature of the task); goal setting and planning (reframing goals); enacting study tactics and strategies (implementing, monitoring, and evaluating strategies); and metacognitively adapting studying (inspecting outcomes and making decisions and adjustments). In spite of effort to investigate the process of homework, current theoretical accounts of homework have paid little attention to students' development and use of self-regulatory processes, but researchers have focused primarily on social environmental factors that influence students' engagement in homework. For example, researchers have examined the effects of parents and teachers on students' homework completion (Cooper & Valentine, 2001).

Among the self-regulatory components associated with achievement effort regulation is one of them (Pintrich et al, 1993). *Effort regulation* refers to students' intention to put forth resources, energy, and time to secure completion of important academic tasks (Pintrich et al, 1993). In an academic setting, self-regulation of academic tasks is imperative because it could determine academic achievement and performance. It is well documented that deficiencies in self-regulation of learning, cognitive capacity, and poor study habits interfere with academic performance among learners (McKeachie, 1999). At the same time, it is well-documented the important role that gender and

ethnicity place on students' academic performance. Similarly, positive effects have been shown for parental involvement on students' academic performance.

*Parental involvement* refers to those actions and initiatives taken by parents to secure their children's academic success. Those actions often involve controlling their children's physical and social environment so their children will not be distracted in order to secure academic tasks completion. Often, parents check homework assignments, help with homework, give special privileges for good grades, limit privileges due to poor grades, require to work around the house, limit TV watching or video games, and limit time with friends (Cooper, 1989). Similarly, the amount of time students spent on homework per week has been found to be an indicator of academic achievement among high school students (Cooper, 1989).

Despite the importance of the factors associated with academic achievement, we still know relatively little about how other factors, such as the students' motivational beliefs and self-regulation of learning are related to academic success once parental involvement is controlled. In many instances, academic performance depends on whether the students continue to study and enact motivation. Achievement of long-term academic goals may depend on the students' ability to use self-regulatory learning strategies and activating their motivation for learning. Thus, the purpose of the present study was to examine the relation between learners' use of self-regulatory strategies and motivational beliefs and academic performance after controlling for the level of parental involvement, individual characteristics of the students such as gender and ethnicity and amount of homework completion. In other words, it is investigated whether students' use of self-regulation and enacting motivation are predictors of academic success above and beyond parental involvement and learners' characteristics.

An important motivational factor associated with academic achievement is self-efficacy. *Self-efficacy* refers to the beliefs that individuals possess about their ability to perform an expected task (Bandura, 1997; Zimmerman, 2000). Self-efficacy is related to successful academic performance (Zimmerman, 2000). Students with high self-efficacy may decide to continue working on an important assignment when test anxiety arises and when a temptation to stop call for attention. However, students with low self-efficacy beliefs may not only succumb to a temptation, they may let disruptive thoughts interfere with performance.

Students may differ in motivation depending on its source, such as whether it is intrinsic or extrinsic (Pintrich & Schunk, 1996). According to Pintrich, Smith, García, and McKeachie (1993), *intrinsic interest* refers to students' enjoyment of participating in a task for the sake of learning, whereas *extrinsic interest* refers to students' engagement in a task for reasons other than the task itself. Students may possess intrinsic but not extrinsic motivation, have extrinsic but not intrinsic motivation or have both or neither (Pintrich & Schunk, 1996).

The use of self-regulated learning strategies may be especially important when emotions arise and alternatives to remain task focused become available. According to

Pintrich and his associates (Pintrich et al., 1993), resource management strategies, which include the effort put into the learning process, are self-regulated strategies that enhance the learner's academic achievement in the classroom (Pintrich et al., 1993). These are similar as the learning strategies Zimmerman (2000) identified by using an interview structure among learners. In these instances, management of available resources would be important to overcome the detrimental effect of test anxiety. In the present study, effort regulation will be investigated.

In sum, the present study was designed to provide additional evidence of the relation between academic achievement, parental involvement, and learners' use of self-regulation of learning and motivation. Specifically, to what extent is self-regulation of learning and motivation associated to academic achievement when controlling for homework parental involvement, gender, and ethnicity.

## Method

### Participants

The sample consisted of 343900 high school students (10<sup>th</sup> grade) selected from the first wave (2002) of the National Center for Education Statistics (ELS:2002). The sample contains a national representation of the students in The United States of America (see Table 1).

### Measures

*Gender and Ethnicity.* In this study, male participants were 173564 and females were 1704125. Caucasian students were 2073511 and Non Caucasian students were 1365979.

*Self-regulation of Learning and Motivational Beliefs.* Self-efficacy beliefs were assessed with Likert scale items (e.g., "Can do excellent job on math assignments"). *Self-efficacy* refers to one's beliefs in his/her capability to perform at a designated level (Bandura, 1997). For example, learners who engage in homework must believe that they can do and have the competence to do the specific homework tasks. A high self-efficacy belief is associated with selection of task, persistence, and use of learning strategies (Zimmerman, 2000). Learners engage in task for which they believe they can succeed. Self-efficacy is associated with the amount of time learners are on task and the effort they place on those tasks. High degree of self-efficacy is associated with high academic performance and use of self-regulatory strategies. The Self-Efficacy scale has a reliability Cronbach's alpha of .92 ( $M = 2.51, SD = .78$ ). Effort regulation was assessed with items such as, "Puts forth best effort when studying"). The Effort Regulation scale has a reliability Cronbach's alpha of .81 ( $M = 2.85, SD = .70$ ). The Intrinsic Interest scale was measured with items such as "Does best to learn what studies." *Intrinsic interest* refers to one's engagement in a task for the sake of learning and mastering the task. In the present study, it was expected that intrinsic motivation would have a direct effect on students' use of learning strategies and performance. That is, students with high intrinsic motivation would persist longer in homework and would obtain higher grade than students with a low intrinsic motivation. The Intrinsic Interest scale has a reliability Cronbach's alpha of .78 ( $M = 2.71, SD = .78$ ). The *Extrinsic Interest* scale was measured with items such as, "Studies to get a good grade." The Extrinsic Interest scale has a reliability Cronbach's alpha of .80 ( $M = 2.65, SD = .86$ ). The items were taken from the

Motivational Strategies for Learning Questionnaire (MSLQ), which assesses the students' course-specific motivation and use of learning strategies (Pintrich et al., 1993).

*Homework Parents ACTIVE and REACTIVE Involvement.* An examination of possible multidimensionality was conducted with a principal components factor analysis and varimax rotation. Using a root one criterion, two factors were extracted that explained 56% of the variance. With a criterion factor loading of  $|.40|$ , Factor 1, which accounted for 39% of the variance. Consisted of three items that generally presented parents' active role in helping their children to complete homework. Factor 2, which accounted for 16% of the variance, reflects reactive parental role in helping their children to complete the homework. Thus, parental ACTIVE Involvement was assessed with items such as, "How often parents checks homework?" "How often parents help with homework?" The Parental ACTIVE Involvement scale has a reliability Cronbach's alpha of  $.71$  ( $M = 2.74$ ,  $SD = .80$ ). Parental REACTIVE Involvement was assessed with items such as "Special privileges given for good grades," and "Required to work around the house." The Parental REACTIVE Involvement has a reliability Cronbach's alpha of  $.66$ .

*Math Academic Achievement.* Academic achievement was assessed with the students' math test standardized score ( $M = 50.00$ ,  $SD = 9.99$ ).

## Results

### *Correlational Analyses*

As shown in Table 2, math standardized test scores were negatively correlated to with ethnicity and gender, homework parents' ACTIVE involvement, and with extrinsic interest. However, it was significantly and positively related to self-efficacy, effort regulation, and intrinsic interest. Ethnicity was negatively correlated to with gender, homework parents' ACTIVE involvement, and self-efficacy. Gender was negatively correlated to ethnicity, homework parents' REACTIVE involvement, and self-efficacy. Parents' ACTIVE involvement was positively correlated to parents' REACTIVE involvement, self-efficacy, effort regulation, intrinsic and extrinsic interest. Self-efficacy was significantly related to math standardized test scores, effort regulation, intrinsic, and extrinsic interest.

### *Regression Analyses*

The dependent variable was math academic achievement (i.e., Math test standardized score). The independent variables were entered in three blocks (Method = Enter). In the first block, gender and ethnicity were entered as the independent variables. Gender and ethnicity explained 9% of the variance; this change in  $R^2$  is significantly different from zero. Gender and ethnicity were significant but negative predictors of academic achievement, which means that males and Caucasian students obtained higher scores on the mat math test than females and nonwhite students.

In the second block, the independent variables were again gender and ethnicity along with the items containing parental ACTIVE and REACTIVE involvement. Again, gender and ethnicity were significant (negative) predictors; and homework parents' ACTIVE involvements were negative predictors. Specifically, parental checking of

homework and how frequently they offer help were negatively related to academic achievement. In contrast, parents' REACTIVE involvement was a significant predictor of academic achievement. Specifically, parental control of TV watching and limiting activity due to low grades was positive predictors of math achievement. This second model explained 10% of the variance; this change in  $R^2$  is significantly different from zero.

At the third block, in addition of gender, ethnicity, and parental active and reactive involvement in students' homework, students' self-efficacy, effort regulation, intrinsic and extrinsic motivations were entered into the equation. The results indicated that self-efficacy, effort regulation, and intrinsic motivation were positive predictors of achievement. However, extrinsic motivation was a negative predictor of achievement. Again, ethnicity, gender, and homework parents' ACTIVE involvements were negative predictors of math academic achievement. This model explained 24% of the variance; this change in  $R^2$  is significantly different from zero.

### Discussion

This study extends the literature on self-regulation of learning and parental involvement by using for the first time a national representation of high school students to assess the associations between these variables. First, it was found that self-regulation of learning and motivational beliefs significantly predict academic achievement above and beyond parental involvement, gender, and ethnicity. Gender, ethnicity, extrinsic motivation, parental active involvements in homework were negative predictors of math academic achievement. However, self-efficacy beliefs, effort regulation, and intrinsic motivation are positive and significant predictors of academic achievement. Similarly, parents' REACTIVE involvement (taking actions to correct behavior that produced or influence low homework completion) was positively related to academic achievement.

Second, students trained to use self-regulated learning strategies and who adopt high motivational beliefs such as self-efficacy and intrinsic interest obtained high academic achievement. Motivational beliefs play a significant role in high school students' self-regulatory processes, homework completion, and academic success. Self-efficacy beliefs and self-regulation processes augmented the homework effects on the test scores. The results provide support for contemporary theoretical emphases on the role of students' motivational self-beliefs and self-regulatory processes in their homework completion and academic achievement.

In this national sample, academic performance it is not just a function of having or acquiring cognitive skills or engaging only in information processing, rather it is also important to sustain motivation and persist on task. Likewise, academic performance is not determined only by parental involvement; rather students' active and proactive role in their own learning process is a key determinant factor in their academic success. Students who are less skilled in using self-regulated learning strategies are those who obtain less benefit from the educational system.

### Educational Implications and Future Research

Three major educational implications are derived from this study. First, parents and educators of females and no Caucasian students may need to orchestrate a students' self-regulatory plan to enhance learners' opportunity to success in future math standardized tests.

Second, teachers may need to develop a cover and over curriculum emphasizing learners' self-regulatory and motivational beliefs. Given the preponderant results of this study, which assert that motivational beliefs and self-regulatory processes are essential components of academic achievement, it is important to understand that parental role should not be limited to check their children' homework completion or to provide an effective environment for their children; rather, the parental role is called to be expand their wins to incorporate the use of learning strategies, effort regulation, intrinsic interest, self-efficacy beliefs among the important conditions and characteristics their children must have and adopt if they want to fully provide a complete learning experience to their children.

Third, teachers should be trained in using self-regulation learning strategies in their classroom in order for them to serve as social models to their students. Students learn through social modeling (Bandura, 1997). Teachers should be trained in how to use self-regulatory learning strategies. Teachers are important social models that influence learners' motivational beliefs and use of self-regulated strategies.

Further research is needed to fully understand these findings. First, the role of motivational beliefs and self-regulatory processes in homework completion and academic outcomes needs to be studied experimentally. Second, the effect of students' self-regulatory processes on academic performance needs further examination. Third, the promising role of students' self-efficacy and self-regulation in their efforts to self-regulate needs further investigation. It is important to train students to engage in self-regulation of their homework activities if they want to obtain superior skills. Although self-report studies are effective in providing information about students' self-regulatory processes, experimental research is warranted. Forth, more research to assess homework from a self-regulated learning approach is warranted if we want to comprehend the educational experience of learners.

### Conclusion

A major contribution of this study was to demonstrate that there is an association between self-regulation of learning and motivational beliefs and academic achievement beyond parental involvement, gender, and ethnicity. These results clearly indicate that self-efficacy is the strongest positive significant predictor of academic achievement in this study. The implications for education of these results are vast. The results suggest that teaching learners how to engage in self-regulation and how to enhance their motivational beliefs could serve to increase students' academic performance. Similarly, teaching learners how to enhance their self-efficacy beliefs may help them to overcome cognitive blocks induced by low motivation or low interest.



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**Table 1**  
**Descriptive Statistics, Sample of Items, Range, and Cronbach Alphas**

	<b>Item Sample</b>	<b>Number of Items</b>	<b>Range</b>	<b>Mean</b>	<b>SD</b>	<b>Reliability <math>\alpha</math></b>
<b>Math standardized Test</b>	----	----	----	<b>50.00</b>	<b>9.99</b>	----
<b>Ethnicity</b>	----	----	----	----	----	----
<b>Gender</b>	----	----	----	----	----	----
<b>Homework Parents ACTIVE Involvement</b>	<b>How often parents checks homework?</b>	<b>2</b>	<b>1 to 4</b>	<b>2.74</b>	<b>.80</b>	<b>.66</b>
<b>Homework Parents REACTIVE Involvement</b>	<b>Parents limit privileges due to poor grades.</b>	<b>2</b>	<b>1 to 4</b>	<b>2.70</b>	<b>.72</b>	<b>.71</b>
<b>Self-Efficacy</b>	<b>Can master math class skills</b>	<b>7</b>	<b>1 to 4</b>	<b>2.51</b>	<b>.78</b>	<b>.92</b>
<b>Effort Regulation</b>	<b>Puts forth best effort when studying.</b>	<b>4</b>	<b>1 to 4</b>	<b>2.85</b>	<b>.70</b>	<b>.81</b>
<b>Intrinsic Interest</b>	<b>Does best to learn what studies.</b>	<b>2</b>	<b>1 to 4</b>	<b>2.71</b>	<b>.78</b>	<b>.78</b>
<b>Extrinsic Interest</b>	<b>Studies to get a good grade.</b>	<b>2</b>	<b>1 to 4</b>	<b>2.65</b>	<b>.86</b>	<b>.80</b>

Note. Gender = male = 0, female = 1. Ethnicity = Caucasian = 0, Non-Caucasian = 1.  $N = 343900$  high school students (10<sup>th</sup> grade).

## Homework and Self-regulation of Learning

Table 2

Pearson Correlation Coefficients between Students' Individual Characteristics, Homework Parental Involvement, and Students' Self-regulation of Learning

	Math Standardized Test	Ethnicity	Gender	Homework Parents ACTIVE Involvement	Homework Parents REACTIVE Involvement	Self-Efficacy	Effort Regulation	Intrinsic Interest	Extrinsic Interest
Math Standardized Test	1								
Ethnicity	-.333	1							
Gender	-.048	-.002	1						
Homework Parents ACTIVE Involvement	-.064	-.006	.025	1					
Homework Parents REACTIVE Involvement	.049	.028	-.036	.437	1				
Self-Efficacy	.357	-.004	-.141	.083	.043	1			
Effort Regulation	.240	.017	.094	.179	.094	.609	1		
Intrinsic Interest	.246	.003	.063	.184	.091	.629	.816	1	
Extrinsic Interest	.139	.026	.062	.199	.130	.417	.630	.622	1

Note. All correlations are significant at the 0.01 level (2-tailed). Gender = male = 0, female = 1. Ethnicity = Caucasian = 0, Non-Caucasian = 1.  $N = 343900$  high school students (10<sup>th</sup> grade)

Table 3

## Individual Characteristics, Parental Involvement in Homework, and Self-Regulatory Processes Predicting Mat Standardized Test Scores

Models (Steps)	Predictors	Standardized Coefficients $\beta$	$t$	$R^2$	$F$
Step 1	Ethnicity	-.28	-437.44**	.09**	102457.82**
	Gender	-.07	-111.98**		
Step 2	Ethnicity	-.29	-447.60**	.10**	61056.81**
	Gender	-.06	-101.07**		
	Parents' ACTIVE Involvement in Homework	-.12	-166.33**		
	Parents' REACTIVE Involvement in Homework	.11	153.43**		
Step 3	Ethnicity	-.29	-486.50**	.24**	85425.62**
	Gender	-.02	-37.91**		
	Parents' ACTIVE Involvement in Homework	-.16	-238.84**		
	Parents' REACTIVE Involvement in Homework	.11	165.54**		
	Self-Efficacy	.32	401.47**		
	Effort Regulation	.05	49.89**		
	Intrinsic Interest	.03	30.45**		
	Extrinsic Interest	-.01	-18.80**		

Note. Dependent Variable: Math test standardized score.  $N = 343900$  high school students (10<sup>th</sup> grade). Significant levels are denoted as \*\* $p < .01$ . Gender = male = 0, female = 1. Ethnicity = Caucasian = 0, Non-Caucasian = 1.