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Self-Efficacy and Academic Achievement – A Case From Turkey

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Abstract

The issues of motivational inclinations, cognitive and meta-cognitive approaches and resource management abilities of university students are considered in predicting academic achievement. First-year university students filled in the Motivated Strategies Learning Questionnaire, completed the Implicit Theories of Intelligence Scale, answered the Achievement Goal Inventory Scale, and self-reported their grade point averages. A multivariate analysis of co-variance (MANCOVA) indicated that students with low self-efficacy were inclined to believe that intelligence is inherent and cannot be changed. It also indicated that students with high self-efficacy preferred mastery goals, which entailed challenges and new knowledge, as well as performance goals that comprised good grades and surpassing others. Additionally, a hierarchical multiple regression analysis revealed that effort-regulation, self-efficacy, and help-seeking explained 21% of the variance in GPA. It was also found that the relationship between self-efficacy and GPA was partially mediated by effort-regulation. Additionally, on account of the fact that students with self-efficacy were able to analyze and control their impulses and thrive in the face of challenge, they excelled academically. Inferences of these findings for educators who may prefer to focus on the objective of increasing academic achievement by strengthening self-efficacy and effort-regulation are also discussed.

Keywords: Goals, academic achievement, effort-regulation, self-efficacy

1. Introduction

Self-efficacy, trusting one's abilities and powers for learning and performance, is a key trait for the academic success of university students (Hill, 2002). Gardner (1983) describes a self-efficacious individual as one who believes in "one's capabilities to organize and execute the courses of action required to produce given attainments" McCombs & Marzano (1990) and Martinez-Pons (2002) classify self-efficacy into categories , one of which is academic self-efficacy and states that it reflects a student's perceived capability with respect to the tasks a student is expected to perform in academic domain. Ollendick, Dailey, & Shapiro (1983) define self-regulation as the process to activate and sustain thoughts, behaviors and emotions in order to reach goals. When goals involve learning, self-regulation is converted to self-regulated learning. Self-regulated learners have a combination of academic learning skills and self-control that makes learning easier, so they are more motivated; in other words, they have the skill and the will to learn (Murphy & Alexander, 2000). Cognitive abilities and academic self- efficacy have been recognized in literature as well-established predictors of academic performance. On the other hand, specific mechanisms that may govern the relationship between cognitive abilities and academic self-efficacy have not been sufficiently explored (Schunk, 2004). Delineating the link between academic self-efficacy and cognitive abilities may necessitate studying cognitive approaches, regulation of resources, relevant theories of intelligence, and achievement goals. As a result of such an study, this gap in the literature may be addressed by hypothesizing that university students with stronger academic self-efficacy would probably use cognitive strategies. Such students may employ metacognition, which may be defined as "thinking about thinking" or "knowledge about knowing and learning" which refers to a higher-order cognition used to monitor and regulate cognitive processes such as reasoning, comprehension, problem solving, learning, and so on (Metcalfe & Shimamura, 1994). They would effectively handle their resources, believe intelligence is pliable, pursue mastery goals rather than performance and therefore display better academic performance (Dweck, 2006). However, because people differ in their metacognitive knowledge and skills, they differ in how well and quickly they learn (Brown, Bransford, Ferrara, & Campione, 1983; Morris, 1990). As social-cognitive theory maintains (Bandura, 2001), some learn from observations only, while others add cognitive skills.

1.1. Self-efficacy, implicit theories of intelligence, goals and performance

Students' theories of intelligence are their beliefs about the nature and workings of their intellect. Research on these theories grew out of the study of students' achievement goals. Research had found that some students were strongly oriented toward validating their ability (they pursued performance goals) whereas other students were oriented toward learning in the same situation (they pursued learning or mastery goals). This raised the question : what determined which goals students would favor ? Social-cognitive theory affirms that self-efficacy beliefs

originate from a broader framework of "self-theories" of Dweck (1999) that entail motivation as well as performance. These theories investigate how people develop beliefs about themselves (i.e., self-theories) and how these beliefs create psychological worlds, shaping thoughts, feelings and behaviors. The approach reveals why some students are motivated to work harder, and why others give into patterns of helplessness and are self-defeating. Her conclusions explore the implications of the concept of self-esteem, suggesting a rethinking of its role in motivation, and the conditions that foster it. One of the two implicit theories, "entity theory of intelligence" proposes that students who subscribe to it are less likely to attempt challenging tasks and are at a risk for academic under-achievement on account of the fact that they believe intelligence to be fixed and stable. Such students have a high desire to prove themselves to others, to be seen as smart and avoid looking unintelligent but they prefer to avoid the expected effort. Contrary to this is the second implicit theory , the "incremental theory" which treats intelligence as malleable, fluid and changeable. Students who advocate this theory are content with the satisfaction coming from the process of learning and may identify opportunities for improvement and tend to work hard. They do not focus on the outcome but rather on what they can attain from participating in the learning processes. The implicit theories about intelligence elucidate feelings of self-efficacy, the goals pursued, the level of self-regulation and academic achievement. Under these conditions, both academic achievement (Woolfolk Hoy & Burke-Spero, 2005) as well as motivation (Valentine, DuBois, & Cooper, 2004) may be influenced. For example, students who adopt the concept of entity intelligence do not favor mastery goals (Fives, Hamman, & Olivarez, 2005) . They would not be expected to mobilize cognitive and meta-cognitive strategies such as elaborating, planning and monitoring (Ommundsen, Haugen, & Thorleif, 2005), would not thrive in the face of difficulties (Busato, Prins, Elshout, & Hamaker, 2000) and feel threatened by demands of more effort (Ames, 1992). On the other hand, students with the "incremental" mentality would probably remain positive, seek mastery rather than performance, intensify effort put in and self-regulate (Zhang, 2003). It has been found that students who believe in incremental intelligence exhibit higher self-efficacy, are motivated better, focus within the realm of metacognition and do not paint themselves to a corner (Komarraju, Karau, & Schmeck, 2009).

Although it was shown that the beliefs of self-efficacy were related to self-regulation (Wolfe & Johnson, 1995; Tuckman, 2003), there seems to be inconsistencies in the findings about goals, achievement and motivation. It has been suggested that when motivation, affect, thoughts, and achievement are taken into consideration, a strong pursuit of both mastery and performance goals may be futile, with mastery goals gaining the upper hand (Dörnyei & Ushioda, 2010). Whenever students feel the need to coordinate their motivation and persistence according to the tasks at hand, they seem to tailor the strategies they prefer to the conditions. For example, when dealing with a task that necessitates performance strategies, they may resort to performance goals. Encountering difficult material may justify utilizing information processing policies. Extrinsic measures may be sought after for staying focused on unrelated material (Komarraju & Karau, 2005). The relationship between self-efficacy and academic achievement is linked to concerns such as self-regulation, implicit theories of intelligence and achievement goals in complex ways. Such a complexity mandates further research. This particular study attempts to accomplish the task of filling such a gap in literature.

1.2. Self-efficacy and performance

Delineating self-efficacy within the framework of social-cognitive theory, Bandura (2001) describes self-efficacy as a motivational orientation that stimulates grit when faced with difficulties, enhances deliberate actions, encourages long-term view, fosters self-regulation and allows for self-correcting whenever necessary. A number of analyses have presented self-efficacy as a reliable predictor of motivation and performance, one that does not alter according to time, environment and different communities (De Raad & Shouwenburg, 1996; Duckworth, Peterson, Matthews, & Kelly, 2007; Farsides & Woodfield, 2003). In his studies, Abouserie (1995) maintains that involvements with success or failure may be related to strong or weak levels of self-efficacy and these relationships can determine the performance of university students. It is also claimed in literature that it is the motivational module of self-efficacy that apparently induces academic performance (Ashwin, 2006 ; Pritchard & Wilson, 2003; Ridgell & Lounsbury, 2004; Chamorro-Premusic & Furnham, 2003). Miller & Brickman (2004) report that strong academic performance may be associated with increased confidence in one's powers and this stimulates students to take greater responsibility for successful completion of tasks and projects. By the same token, Frey & Determan (2004) claim that the students who possess superior abilities display better performance and receive superior evaluations . Such students apparently possess higher self-efficacy and less anxiety. Furthermore, Livengood (1992) underlines similar fluctuations within a single semester during which students receive continuous feedback on their performance. While students who perform well report higher self-confidence and attribute a greater value for their learning, low achieving students state less confidence in

themselves. Thus a vigorous predictor of academic performance seems to be a combination of self-efficacy and motivation, and, due to its complexity, it deserves further exploration.

1.3. Self-efficacy and self-regulation

Self-regulated learning emphasizes autonomy and control by the student who monitors, directs, and regulates actions toward goals of information acquisition, expanding expertise, and self-improvement. In particular, self-regulated learners are cognizant of their academic strengths and weaknesses, and they have a repertoire of strategies they appropriately apply to tackle the day-to-day challenges of academic tasks. These learners believe that intelligence is malleable (as opposed to entity, or fixed views of intelligence) and attribute their successes or failures to factors within their control. They also believe that opportunities to take on challenging tasks, practice their learning, develop a deep understanding of subject matter, and exert effort will give rise to academic success . In part, these characteristics may help to explain why self-regulated learners usually exhibit a high sense of self-efficacy. These characteristics to success probably continue beyond school (Grzegorek, Slaney, Franze, & Rice, 2004). Ozer & Benet-Martinez (2005) offer insights into ways that relate self-efficacy and performance. They claim that these involve motivational components, cognitive and meta-cognitive approaches as well as resource management. In other words, students with high self-efficacy turn out to be more tenacious, hard-working, prefer to deal with more difficult tasks, and are able to cope with their anxiety. Snyder (2000) maintains that such students are more likely to resort to self-regulating processes such as goal setting, self-evaluation, and self-monitoring. Furthermore, Entwistle & Entwistle (1970) observed that students with self-confidence have a tendency to exhibit greater self-control, uphold mastery goals, study harder when exposed to difficulties, and obtain superior grades. An insight comes from Zhang (2002) who contends that students with greater self-efficacy can perform at a higher level because they can cope more effectively with cognitive demands, a clarification to which the element of mastery goal orientation may be added, according to Anderson, Boyles, & Rainie (2012) . It is also possible that these students perceive their learning to be interesting, valuable, related to their objectives and therefore employ pertinent learning styles (Duckworth & Seligman, 2005) . It can be surmised that self-efficacy may be coupled to academic performance either through goal-setting or effort regulation, both of which serve as intrinsic stimulations (Payne, Youngcourt, & Beaubien, 2007; Pajares, 1996; Doyle & Moen, 1978).

According to Laurillard (2002), self-efficacy may be enhanced when self-regulated learners actively manage and coordinate their internal and external circumstances. Among the hallmarks of enhanced self-efficacy may be the knowledge of whom to ask for help, decision-making on the level of effort required, intentions designed to achieve, and a scheduled time-table for study and review. Studying highly self-regulated students, Green, Nelson & Marsh (2006) maintain that such students put in extra effort by solving supplemental problems, carry out extra-work via online tutorials, master the material, and give up avoidance behavior. Kaufman, Agars, & Lopez-Wagner (2008) studied the case of the procrastinators in order to emphasize the importance of self-efficacy. According to their findings, procrastinators perform poorly not because they are ignorant of useful approaches but because they lack the confidence to apply these while starting and completing tasks. What is more, as students begin to enroll in the relatively challenging courses of third and fourth years , they recognize the importance of metacognitive skills to supervise and regulate their efforts (Poropat, 2009) . Therefore, an effective mechanism for improving self-efficacy, motivation and achievement may induce the students to acquire and develop self-regulating learning strategies (Phillips, Abraham, & Bond, 2003).

1.4. The current study

It has been emphasized in literature that some characteristics lead to higher academic performance. For example, motivated students would probably apply greater effort; confident students (intrinsic, extrinsic, control of learning and self-efficacy, low test anxiety) would persevere; less anxious students would not be sidetracked; those who observe suitable cognitive and meta-cognitive strategies (rehearsal, elaboration, organization, critical thinking and self-regulation) are likely to learn and recollect effectively; those who believe that intelligence may be restructured develop a stance that they possess the skills needed to perform; efficient students would come among those who successfully manage their resources (time and study environment, effort regulation, peer learning and help seeking). Based on these premises, the following hypotheses are made:

1. Students with high self-efficacy are more likely to endorse incremental theory of intelligence relative to those with low self-efficacy (who would probably advocate an entity approach)
2. Students with high self-efficacy will favor learning/mastery goals (relative to students with low self-efficacy who would probably prefer performance goals)

3. Students with high self-efficacy will probably report a higher grade point average.

2. Method

2.1. Participants

The participants consisted of 214 undergraduate university students enrolled in various departments of a non-profit, private university in İstanbul, Turkey. The ages of the students varied between 18 to 20. Since the language of instruction is English , the scales used were in English as well . The native language of the students was Turkish and English was their second language with levels ranging from intermediate to advanced.

The breakdown according to departments and gender is given in table 1:

Table 1. Breakdown of participants according to gender and department

Department	Arts & Sci.		Bus. Adm.		Commun.		Engineer.		Architect.		Law		total
Gender	M	F	M	F	M	F	M	F	M	F	M	F	
Number	23	17	20	13	11	19	27	25	17	17	10	15	
Sum (M+F)	40		33		30		52		34		25		214
%	18.7		15.4		14		24.3		15.8		11.8		100

87% of the students were first-year, 9 % were second and 4 % third-year students.

2.2. *The Instruments – Questionnaires*

Motivated strategies for learning questionnaire: of Pintrich, Smith, Garcia, & McKeachie (1991) consists of 81 items and assesses motivational orientations (intrinsic, extrinsic, task value, control of learning, self-efficacy for learning and performance, and test anxiety) cognitive and meta cognitive learning strategies (rehearsal, elaboration, organization, critical thinking and self-regulation) and resource management strategies (time and study environment, effort regulation, peer learning and help seeking). It offers an established reliability (Pintrich, Smith, Garcia, & McKeachie, 1993). 7-point rating scale was used for all items (1 = not at all true of me to 7 = very true of me) . Cronbach's alpha values for internal consistency were 0.70 or above for all the 15 subscales with the exception of control of learning (0,67) and help seeking (0,65).

The implicit theories of intelligence scale: of Grant and Dweck (2003) contains 8 items. A sample item for entity theory reads , " Your intelligence is something about you that you cannot change very much" and for incremental approach, " You can change even your basic intelligence level considerably" . Cronbach's alpha values for internal consistency were 0.84 (entity) and 0,88 (incremental).

Achievement goal inventory: of Grant and Dweck (2003) is a 18-item scale which assesses achievement, normative and mastery goals . Cronbach's alpha values for internal consistency ranged from 0,81 to 0,89. A sample item for achievement goals states," A major goal I have in my courses is to perform really well". A sample item for normative goals announces, " A major goal I have in my courses is to get higher grades than the other students ". A sample item for mastery goals declares, " In my classes, I focus on developing my abilities and acquiring new ones ".

2.2. Procedure

The 214 students filled in the demographic data, completed the Motivated Strategies for Learning Questionnaire (MSLQ), the implicit theories of intelligence scale, Achievement goal inventory and self-reported their current GPAs. The procedure was administered in the spring term of 2014 during class-time and the students were asked to respond individually. They were given to understand that their answers were going to remain confidential. Ethical standards to protect the rights of the participants were observed throughout the study.

3. Results

3.1. Correlation analyses

Hypothesis 3 is tested by means of correlation analyses. Several significant relationships between GPA and the subscales of the Motivated Strategies for Learning Questionnaire (MSLQ) were discerned, in which the GPA was positively associated with some of the subscales of the MSLQ and negatively with others. The subscales of task value, control of learning beliefs, self-efficacy, rehearsal strategies, self-regulation, time management and effort-regulation produced positive correlations and test anxiety, negative. The findings are given in table 2 :

Table 2. Correlations between the subscales of MSLQ and GPA (N=214)

variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. GPA	-															
Motivational orientations																
2. intrinsic	0,13	-														
3. extrinsic	0,06	0,29	-													
4. task value	0,11	0,61	0,35	-												
5. control learning	0,15	0,48	0,24	0,42	-											
6. self-efficacy	0,36	0,53	0,36	0,56	0,39	-										
7. test anxiety	-0,17	-0,04	0,25	-0,04	0,05	-0,30	-									
Cognitive-metacognitive																
8. rehearsal	0,22	0,27	0,39	0,36	0,19	0,32	0,15	-								
9. elaboration	0,11	0,48	0,26	0,51	0,21	0,46	-0,06	0,48	-							
10. organization	0,13	0,34	0,29	0,31	0,09	0,25	0,17	0,56	0,54	-						
11. critical thinking	-0,04	0,48	0,18	0,36	0,27	0,36	0,03	0,29	0,53	0,32	-					
12. self-regulation	0,16	0,56	0,21	0,39	0,22	0,48	-0,09	0,49	0,67	0,56	0,64	-				
Resource management																
13. time and study	0,34	0,35	0,27	0,38	0,24	0,46	-0,15	0,58	0,42	0,44	0,23	0,51	-			
14. effort regulation	0,45	0,45	0,26	0,48	0,17	0,56	-0,28	0,46	0,42	0,34	0,22	0,42	0,69	-		
15. peer learning	-0,04	0,32	0,24	0,16	0,08	0,28	0,14	0,33	0,35	0,36	0,38	0,43	0,16	0,11	-	
16. help seeking	-0,08	0,19	0,18	0,25	-0,08	0,28	0,09	0,31	0,32	0,22	0,24	0,36	0,26	0,17	0,66	-

p< 0,05

3.2.*Regression analyses*

Hierarchical regression analyses were carried out for testing hypothesis 3 further. For each set of variables or block, a stepwise entering method was employed, with the aim of predicting GPA. In the first phase, the subgroup of motivation variables were entered. In the second phase, cognitive and metacognitive learning strategies were added. In the third phase, resource management strategies were inserted. From the first subgroup of motivation variables, self-efficacy was the only one that significantly predicted GPA (β = 0,35, B=0,25, t(211) = 5,87 , p<0,05). From the second subgroup of cognitive and metacognitive learning strategies, there were no incremental predictors. From the third subgroup of resource management, both effort regulation (β = 0,37 , B = 0,20, t(211) = 5,76, p<0,05) and help-seeking (β = -0,19, B = 0,09, t(211) = -2,87, p<0,015) were found to be significant predictors of incremental variance in GPA. Table 3 summarizes the findings:

Table 3. Hierarchical regression analysis predicting GPA

result	step	variable	B	SE of B	β	R^2	Adjusted R^2
GPA	1	Self-efficacy	0,25	0,09	0,35	0,12	0,11
	2	Self-efficacy	0,13	0,07	0,16		
		Effort-regulation	0,21	0,06	0,37		
						0,18	0,18
	3	Self-efficacy	0,14	0,07	0,19		
		Effort regulation	0,20	0,06	0,37		
		Help seeking	-0,09	0,05	-0,19		
						0,21	0,19

p< 0,05

3.3. Multivariate analysis of co-variance

Multivariate analysis of co-variance (MANCOVA) is a statistical procedure that uses several dependent variables simultaneously within the same analysis. This procedure is implemented in order to determine to what extent students in high and low self-efficacy groups differ in terms of implicit theories of intelligence and academic goals, thereby the first and second hypothesis were tested, with particular emphasis on gender.

The self-efficacy is divided into two groups with the high self-efficacy group above the mean and the low self-efficacy below the mean. After controlling for participants gender, significant differences between the high self-efficacy groups and low emerged, partial η^2 = 0,22, Pillai's trace = 0,24 , F(8, 200) = 12,485, p < 0,05. Gender , with partial η^2 = 0,08, F(8, 200) = 3,38, p < 0,05, appeared to be a significant covariate of implicit theories of intelligence and academic goals. Significant differences between the two self-efficacy groups on entity theory of intelligence and various goals (e.g., normative outcome, achievement outcome, achievement ability, learning, and mastery) were disclosed by univariate ANOVAs.

Table 4 presents the findings:

Table 4. Multivariate analysis of co-variance (MANCOVA) showing the differences between high and low self-efficacy groups in the approaches of intelligence and academic goals (N=214)

Variable	Self-efficacy	M	SD	F	Partial η^2
Learning	Low	4,47	0,78	59,56	0,19
	High	5,73	0,84		
Mastery	Low	3,26	1,48	54,60	0,15
	high	4,74	1,28		
Achievement – outcome	Low	5,78	0,89	32,65	0,09
	High	5,96	0,56		
Achievement – ability	Low	4,78	1,43	10,14	0,05
	High	4,67	1,36		
Normative – outcome	Low	4,26	1,54	13,82	0,05
	High	4,89	1,44		
Normative – ability	Low	3,25	1,34	0,70	0,01
	High	3,42	1,94		
Incremental	Low	4,48	1,08	3,65	0,04
	High	4,67	1,24		
entity	Low	2,32	1,12	5,08	0,03
	High	2,56	1,26		

$P < 0,05$

The scores may be examined according to the self-efficacy attribute being high and low. Taking the entity theory of intelligence into consideration, the results of the low self-efficacy group (M = 2,32 , SD = 1,12) turned out to be significantly higher than the high self-efficacy group (M = 2,56 , SD = 1,26) with partial $\eta^2 = 0,03$, F (1, 207) = 5,59, p= 0,037. Contrary to this, the outcomes of the high self-efficacy groups of a number of variables were significantly higher than the low-self-efficacy groups. For example, achievement outcome goals yield partial $\eta^2 = 0,09$, F (1, 207) = 32,65, p< 0,05 . Furthermore, the scores of the high self-efficacy group of achievement ability goals were again significantly higher than the low-self-efficacy group with partial $\eta^2 = 0,05$, F (1, 207) = 10,14 , p< 0,05. Continuing in the same manner, the high-efficacy group of the normative outcome goals produced partial $\eta^2 = 0,05$, F (1, 207) = 13,82, p< 0,05 ; the learning goals exhibited partial $\eta^2 = 0,19$, F (1, 207) = 59,56, p< 0,05 ; mastery goals returned partial $\eta^2 = 0,15$, F (1, 207) = 54,60, p< 0,05.

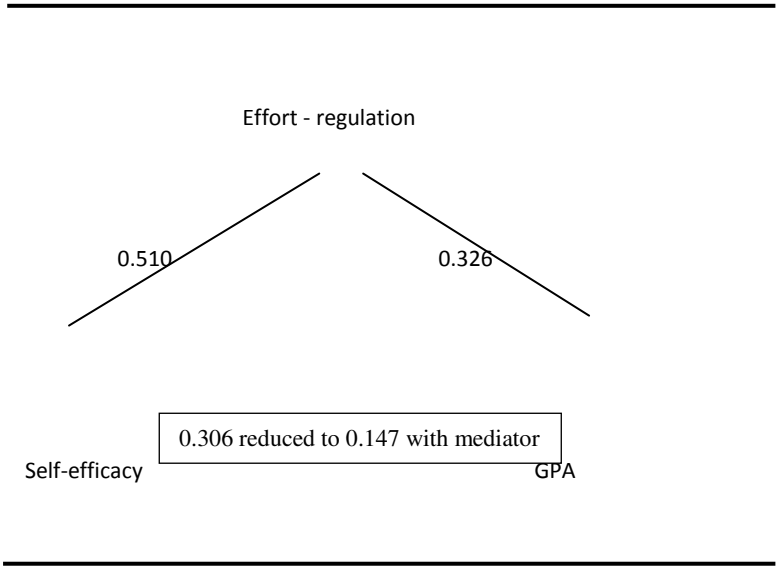
3.4. Mediation analyses

In order to discern the process ,by means of which self-efficacy predicts GPA, effort regulation was tested as a mediator and it was realized that such a mediation was justified (Baron & Kenny, 1986). While testing for mediation, a significant association between self-efficacy and GPA was found, with $\beta = 0,35$, B = 0,25, t (211) = 5,84, $p < 0,05$. A similar relationship was observed between self-efficacy and effort regulation, with $\beta = 0,55$, B = 0,65, t (211) = 12,64, $p < 0,05$. In addition, a significant relationship between effort regulation and academic achievement was observed , with $\beta = 0,36$, B = 0,21, t (211) = 5,38, $p < 0,05$. The relationship between self-

efficacy and academic achievement was reduced from β = 0,35 to β = 0,16 , B= 0,12, t(211) = 2,61, p= 0,061. This outcome signified that effort regulation partially mediated the relationship between self-efficacy and GPA. A Sobel test (p<0,05) maintained effort regulation as a partial mediator of the relationship between self-efficacy and academic achievement.

Figure 1

Effort regulation partially mediating self-efficacy and GPA



4. Discussion , implications and conclusion

The results of this study indicate that students who believe that intelligence is changeable and may be modified by effort possess high self-efficacy and confidence their academic performance. Similar findings suggesting that self-efficacy can be enhanced and developed can be found in literature (Gardner, 1983) . Since these empirical findings agree with the results of this study, the outcome is encouraging. Thus, both enlightening students about developing their self-efficacy and also strengthening their belief that their performance can be improved may ensue in additional effort and hard work. Academic goals such as being open to new experiences, getting superior grades, surpassing other students, proving intelligence through schoolwork are embraced by students who possess self-efficacy. Against this, there are students with lower self-efficacy who assume that intelligence is an entity that offers no possibility of improvement , who feel they would not be able to succeed in university, and therefore are less likely to target any kind of goal, mastery or performance. These findings emphasize the intriguing relationships between the level of self-efficacy of students, their implicit beliefs, and their inclinations in choosing a target, mastery or performance.

Another critical finding is that students who are more confident and self-assured are more likely to attain higher levels of academic performance, which implies that the beliefs of self-efficacy seem to play an important role in predicting academic achievement. In particular, self-efficacy appears to invoke the employment of various metacognitive strategies and resources that are indispensable for academic performance. For example, upon encountering course work that may be boring or difficult, students with self-efficacy may resort to effort-regulation and thrive. Such students perform well academically because they would be self-motivated and would probably manage easily without seeking help neither from peers and nor from instructors. Furthermore, as partial mediation analyses reveal, due to the fact that students with high self-efficacy are better able to control their natural impulses when studying challenging material or when they are distracted, it is likely that they would receive higher grades. When under stress, students with self-efficacy seem to maintain their self-discipline, uphold their motivation and adjust their efforts under taxing circumstances. Thus, a high self-efficacy apparently fosters the ability to exert self-control and perseverance, which may be conducive to a higher GPA. The importance of effort regulation is supported by other studies that identify related mechanisms (Mills &

Blankstein, 2000) as well as academic discipline and managing emotions (Meece, Anderman, & Anderman, 2006). Thus, self-efficacy may be declared as a critical intrinsic resource that provides self-disciplined behavior which enables students to remain focused while fulfilling their obligations.

Educators and administrators may benefit in various ways from the results of this study. One of them is that Bandura's (1989) four sources of self-efficacy (mastery experiences, modeling, social persuasion, and managing physiological arousal) may be incorporated into the plan of a course and the design of classroom activities, instructors may consider developing the self-efficacy of students by incorporating approaches based on these four. Students may be provided with opportunities and tools to learn how to handle success or failure, to imitate high-achieving role models, to devise ways for overcoming obstacles and to conceive of approaches for managing performance anxiety. Accordingly, setting goals that are relatively easy to reach and thereby allowing students to experience success would help develop and enhance the self-efficacy of the students. Also providing students with particular examples of how individuals are expected to behave under specific circumstances is likely to have positive influence on their self-beliefs about their own abilities and performances (Komarraju & Nadler, 2013). Finally, since stress and anxiety can easily affect accustomed behavior, providing students with relevant insight and means for managing stressful conditions can be an irreplaceable cache for both advancing self-efficacy and motivation and consequently achieving higher levels of learning and performance. Students can also be tutored in time-management techniques and be trained about self-regulation. Students can be helped to appreciate the value of goals that focus on mastery and can be encouraged to implement self-regulatory approaches for persisting through difficult and challenging tasks. In order to strengthen the motivational beliefs of the students, educators can point out to the practical value of the material that is being studied and the importance of effort (Linnenbrink & Pintrich, 2002). Providing students with clear examples of passing work, clarifying expectations, and giving ample feedback are all likely to provide scaffolding for students' attempts and help them develop self-efficacy (Judge, Jackson, Shaw, Scott, & Rich, 2007).

Although the results of this study show that self-efficacy and effort-regulation may be used jointly for predicting academic achievement, it comes with certain limitations, one of which pertains to self-reporting the GPA. Although cases are cited in the literature that report strong positive correlation between self-reported and actual scores of GPA (Biggs, 1993; Anaya, 1999), it may be expedient to obtain consents of students and access GPAs from official records in order to minimize potential mistakes. Secondly, relationships between self-beliefs, motivational inclinations, cognitive and metacognitive approaches and performance can be studied on a longitudinal basis, allowing for more in-depth understanding. Thirdly, the fact that this study is conducted in a single institution hinders generalization. The fourth constraint is the lack of earlier research in this country which might have been used for comparison among universities. The medium of instruction is a further drawback. As the medium of instruction is English, results obtained can only be used to infer about students of the universities that provide education in English. And the final limiting factor is the fact that majority of the participants are of the first year – allowing for more students of upper classes may make a difference.

In conclusion, the results of this study make an important contribution to the field by investigating a complex set of relationships among a series of predicting variables, providing evidence about the key functions of implicit theories of intelligence and achievement goals, and ascertaining the central role of self-efficacy and effort regulation in predicting academic achievement.

References

Abouserie, R. (1995). Self-esteem and achievement motivation as determinants of students' approaches to studying . *Studies in higher education , 20*, 19-26.

Ames, C. (1992). Classrooms, goals, structures and student motivation. *Journal of Educational Psychology, 84*, 267-271.

Anaya, G. (1999). Accuracy of self-reported test scores . *College and university, 75*, 13-19.

Anderson, A., Boyles, J., & Rainie, L. (2012). *The future of higher education* . Retrieved 2012, from Pew Internet Research Center: http://www.pewinternet.org/topics/future-of-the-internet.aspx

Ashwin, P. (2006). *Changing higher education.* Hoboken: Routledge.

Bandura, A. (1989). Human agency in social cognitive theory. *American psychologist, 44*, 1175-1184.

Bandura, A. (2001). Social cognitive theory: an agentive perspective . *Annual review of psychology, 52*, 1-26.

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

Biggs, J. (1993). What do inventories of students' learning processes really measure? A theoretical review and clarification. *British journal of psychology, 63*, 3-19.

Brown, A., Bransford, J., Ferrara, R., & Campione, J. (1983). Learning and remembering and understanding. In P. Mussen (Ed.), *Handbook of child psychology* (Vol. 3, pp. 515-629). New York: Wiley.
Busato, V., Prins, F., Elshout, J., & Hamaker, C. (2000). Intellectual ability, learning style, personality, achievement motivation and academic success of psychology students in higher education . *Personality and individual differences , 29*, 1057-1068.
Chamorro-Premusic, T., & Furnham, A. (2003). Personality predicts academic performance: evidence from two longitidinal samples. *Journal of reserach in personality, 37*, 319-338.
De Raad, B., & Shouwenburg, H. (1996). Personality in Learning and education . *European journal of personality, 10*, 303-336.
Doyle, K., & Moen, R. (1978). Toward the definition of the domain of academic motivation. *Journal of educational psychology, 70(2)*, 231-236.
Dörnyei, Z., & Ushioda, E. (2010). *Teaching and researching motivation* (2 ed.). London: Longman.
Duckworth, A., & Seligman, M. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents . *Psychological science , 16*, 939-944.
Duckworth, A., Peterson, C., Matthews, M., & Kelly, D. (2007). Grit: perseverance and passion for long term goals . *Journal of personality and social psychology, 92*, 1087-1101.
Dweck, C. (1999). *Self-theories: their role in motivation, personality and development.* Philadelphia , PA: The psychology press.
Dweck, C. (2006). *Mindset.* New York: Random House.
Entwistle, N., & Entwistle, D. (1970). The relationships between personality, study methods, and academic performance . *British journal of educational psychology, 40*, 132-143.
Farsides, T., & Woodfield, R. (2003). Individual differences and undergraduate academic success: the roles of personality, intelligence and application . *Personality and individual differences , 40*, 1225-1243.
Fives, H., Hamman, D., & Olivarez, A. (2005). Does Burnout start with student teaching: analyzing efficacy, burnout, and support during the student-teaching semester . Montreal, CA: Annual meeting of the America Educational Research Association.
Frey, M., & Determan, D. (2004). Scholastic assessment or g? The relationship between scholastic assessment test and general cognitive ability. *Psychological science, 15*, 373-378.
Gardner, H. (1983). *Frames of mind: the theory of multiple intelligences.* New York: Basic Books.
Grant, H., & Dweck, C. (2003). Clarifying achievement goals and their impact. *Journal of personality and social psychology, 85*, 541-553.
Green, J., Nelson, G., A.J., M., & Marsh, H. (2006). The causal ordering of self-concept and academic motivation and its effect on academic achievement. *International education journal, 7*, 534-546.
Grzegorek, J., Slaney, R., Franze, S., & Rice, K. (2004). Self-criticism, dependency, self-esteem, and grade point stisfaction among clusters of perfectionists and non-perfectionists. *Journal of counseling psychology, 51*, 192-200.
Hill, W. (2002). *Learning: a survey of psychological interpretations* (7 ed.). Boston: Allyn and Bacon.
Judge, T., Jackson, C., Shaw, J., Scott, B., & Rich, B. (2007). Self-efficacy and work-related performance: the integral role of individual differences. *Journal of applied psychology, 92*, 107-127.
Kaufman, J., Agars, M., & Lopez-Wagner, M. (2008). The role of personality and motivation in prediciting early college academic success in non-traditional students at Hispanic-serving institution. *Learning and individiual differences, 18*, 492-496.
Komarraju, M., & Karau, S. (2005). The relationship between the Big Five personality traits and academic motivation . *Personality and individual differences , 8*, 557-567.
Komarraju, M., & Nadler, D. (2013). Self efficacy and academic achievement: why do implicit beliefs, goals and effort regulation matter . *Learning and individual differences , 25*, 67-72.
Komarraju, M., Karau, S., & Schmeck, R. (2009). Role of the big five personality traits in predicting college students' academic motivation and achievement. *Learning and individual differences , 19*, 47-52.
Laurillard, D. (2002). *Rethinking university teaching:a framework for effective use of educational technology* (2nd edition ed.). London: Routledge Plamer.
Linnenbrink, E., & Pintrich, P. (2002). Motivation as an enabler for academic success. *Scool psychology review, 31*, 313-327.
Livengood, J. (1992). Students' motivational goals and beliefs about effort and ability as they relate to college academic success. *Research in Higher education, 33*, 247-261.
Martinez-pons, M. (2002). A social cognitiveview of parental influence on student academic self-regulation. *Theory into practice, 61*, 126-131.

McCombs, B., & Marzano, R. (1990). Putting the self in self-regulated learning: the self as agent in integrating skill and will. *Educational psychologist, 25*, 51-70.
Meece, J., Anderman, E., & Anderman, L. (2006). Classroom goal structure,student motivation and academic achievement. *Annual Review of Psychology, 57*, 487-503.
Metcalfe, J., & Shimamura, A. (1994). *Metacognition: knowledge about knowing.* MA: MIT Press.
Miller, R., & Brickman, S. (2004). A model ofo future-oriented motivation and self-regulation. *Educational Psychology Review, 16*, 9-33.
Mills, J., & Blankstein, K. (2000). Perfectionism, intrinsic vs extrinsic motivation and motivated strategies for learning. a multidimansional analysis of university students . *Persoanlity and individual differences, 29*, 1191-1204.
Morris, P. (1990). Metacognition. In M. Eysenck (Ed.), *The blackwell dictionary of cognitive psychology* (pp. 225-229). Oxford: Basil Blackwell.
Murphy, P., & Alexander, P. (2000). A motivated Exploration of Motivation Terminalogy. *Contemporary Educational Psychology, 25*, 3-53.
Ollendick, T., Dailey, D., & Shapiro, E. (1983). Vicarious reinforcement: expected and unexpected effects. *Journal of applied behavior analysis, 16*, 483-491.
Ommundsen, Y., Haugen, R., & Thorleif, L. (2005). Academic self-concept, implicit theories of ability and self-regulation strategies. *Scandinavian journal of educational research, 49*, 461-474.
Ozer, D., & Benet-Martinez, V. (2005). Personality and the prediction of consequential outcomes. *Annual Review of Psychology, 57*, 401-421.
Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research, 66*, 543-578.
Payne, S., Youngcourt, S., & Beaubien, J. (2007). A meta-analytic examination of the goal-orientation nomological net . *Journal of applied psychology, 92*, 128-150.
Phillips, p., Abraham, C., & Bond, R. (2003). Personality , Cognition and university students' examination performance. *European journal of personality, 17*, 435-445.
Pintrich, P., Smith, D., Garcia, T., & McKeachie, W. (1991). A manual for the use of the motivated strategies for learning questionnaire(MSLQ). *Technical report no 91-B-004*. The Regents of the University of Michigan.
Pintrich, P., Smith, D., Garcia, T., & McKeachie, W. (1993). Reliability and predictive validity od the motivated strategies for learning questionnaire (MSLQ) . *Educational and psychological measurement, 53*, 801-813.
Poropat, A. (2009). A meta-analysis of the five-factor model of personality and academic performance. *psychological bulletin*, 322-338.
Pritchard, M., & Wilson, G. (2003). Using emotional and social factors to predict student success. *Journal of college student development, 44*, 18-28.
Ridgell, S., & Lounsbury, J. (2004). Prediciting academic success:general intelligence, "big five" personality traits and work drive. *colleg student journal , 38*, 607-618.
Schunk, D. (2004). *Learning theories: an educational perspective* (4 ed.). Columbu, OH: Merrill/Prentice-Hall.
Snyder, R. (2000). The relationship between learning styles and multiple intelligences and academic achievement of high school students. *High school journal, 83*, 11-20.
Tuckman, B. (2003). The effect of learning and motivation strategies training on college students' achievement. *Journal of college student development, 44*, 430-437.
Valentine, J., DuBois, D., & Cooper, H. (2004). The relations between self-beliefs and academic achievement- a systematic review . *Educational psychologist, 39*, 111-133.
Wolfe, R., & Johnson, S. (1995). Personality as a predictor of college performance. Educational and psychological styles in addition to personality traits? . *Personality and educational differences, 33*, 445-458.
Woolfolk Hoy, A., & Burke-Spero, R. (2005). Changes in teacher efficacy during the early years of teaching: a comparison of four measures. *teaching and teacher education, 21*, 343-346.
Zhang, L. (2002). Measuring thinking styles in addition to personality traits? *Personality and individual differences, 33*, 445-458.
Zhang, L. (2003). Does the big five predict learning approaches. *Personality and individual differences, 34*, 1431-1446.