

## Mediating Effect of Academic Engagement in Relationship between Academic Self-Efficacy and Academic Achievement among Adolescent in Tehran

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**Abstract:** Studies have shown the academic self-efficacy and other psychological influences account for considerable variance in academic achievement through a range of mediational pathway, although no research to date has tested the mediational relationships identified. The present study investigated the relations among academic self-efficacy and academic engagement on academic achievement of 500 students aged 12-18 years in Tehran-Iran. The Morgan & Jink academic self-efficacy scale and Short, Feleming, Guiling, & Ropper academic engagement scale were administered to participants prior to academic achievement being assessed using cumulative grade point average (CGPA). The results of a 3-step multiple regression analysis and Sobel-test indicated that the positive effects of academic self-efficacy on academic achievement is significantly mediated by academic engagement.

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### 1. Introduction

Adolescence is an intriguing stage of development filled with many physical, cognitive, social, and emotional changes. Blackwell, Trzesniewski, Kali and Dweck (2007) describe this period as a sensitive and critical time with important implications for school achievement. At the same time, the increase in academic demands and the complexity of the school structure make the task of academic success for adolescents even more difficult (Patrikakou, 2004).

According to Fouladi (2007) academic achievement is the most important issue in education in Iran and it is therefore not surprising that many key people – from educators to sociologists and psychologists – have focused their attention and efforts to investigate academic achievement and identify the reasons why some students perform well academically while others fail and drop out. Fathi (2006), for example indicates that such research has been focused on low academic achievement as they have become a serious concern for many Iranian families, societies and even the governing authorities. Iran is no different from many other developing countries where problems in relation to low academic performance have arisen among children and adolescents.

In recent years, countries such as Canada, has noted an increase in children with risk factors that may compromise their present achievement and future success, and approximately 27.6% or 1 in 4 students is considered to be at risk for school failure

(Jordan, 2006). Also, across the 21.9 million adults in California, 2.19 million males and 1.96 million females (20% of the students) were dropouts (Belfield, 2007). In Iran, a study by Ghasemi (2010) found that 22% of the students in Iran suffer from low academic achievement due to family problems and personal factors.

The importance of academic achievement among adolescents is evidenced in various past findings, including those by Ellefsen and Beran (2007), Fallon and Illinois (2010), Speight (2009), and Stewart (2007), which showed that high and low academic achievement differs depending on parental and personal factors such as academic self-efficacy, and academic engagement. Low academic achievement has been associated with high unemployment and reduced income, welfare dependency, high levels of depression, social isolation, and criminal behavior (Parkhurst & Asher, 1992). While, high academic achievement was found to relate to emotional and psychological health, being optimistic about academic potential, lower depression, and better personal adjustment (Whitlock, 2006).

Besides parental, school, teacher, environment factors, personal factors such as academic self-efficacy and academic engagement were noted to have significant positive relationships with adolescent's academic achievement (Multon, Brown, & Lent, 1991; Fredrik, Blumenfield, & Paris, 2004).

According to Bandura (1977), Self-efficacy refers to a person's belief in oneself to complete or perform specific behaviors. Academic self-efficacy indicates the children's belief in their ability to handle various school works at different levels (Schunk, 2003). Adolescents with high academic self-efficacy have significantly higher academic achievement (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006; Greene, Miller, Crowson, Duke, & Akey, 2004; Denissen, Zarrett, & Eccles, 2007). Social Cognitive Theory (Bandura, 1986) is based on how personal-beliefs are associated with personal agency and how confidence impacts on academic interest, education, and achievement (Bandura & Locke, 2003; Wigfield et al., 2006). According to Social Cognitive theory, self-efficacy is defined as the way an individual seem himself or herself in his or her ability to act in the ways necessary to achieve an expressed goal (Bandura, 1991). Such self-belief also determines how people think and behave. These diverse effects are achieved as a result of cognition, motivation, affect, and selection processes (Bandura, 1994).

Students' perceived self-efficacy influences their ability to pick up particular skills by being more persistent. This is based on the belief that the more persistent one is, the greater the likelihood of successful task accomplishment (Bandura, 1993). Students with a high self-belief show greater effort are persistency and resiliency when challenged by difficult tasks and circumstances. Such self-beliefs are strong predictors of the successes that students can eventually achieve (Bandura, 1997). Thus, self-belief has an important role in the process of an individual's intellectual development and is a significant factor in academic achievement (Alfassi, 2003; Bandura, 1995). This theory lends credence to the association between academic self-efficacy and academic performance. McCoach (2002) asserted that students develop confidence in many ways, and those who are confident about their skills are more likely to engage in a variety of activities, which lead to high academic achievement.

Academic engagement is another individual factor that plays a significant role in students' academic achievement (Ogbu & Davis, 2003; Stewart, 2007). Such engagement can be described as the level of commitment and involvement or the amount of time, energy and effort that students put into their educational learning activities (Greene et al., 2004; Stewart, 2007). Research studies (Carbonaro, 2005; Johnson, Crosnoe, & Elder, 2001; Stewart, 2007; Sirin, 2005; Flowers & Flowers, 2008; Wang & Holcombe, 2010) show that an adolescent student's engagement in academic activities has a significant effect on academic

achievement. Students with higher academic engagement, tend to have higher academic performance.

In the present study, involvement in school activities is seen as a mediating construct that connects academic self-efficacy with academic achievement of their children. This belief is supported by a small but steadily growing body of research. However, there is still a lack of evidence to support the assumption that school engagement has a mediating impact on factors like parenting style or peer and school variables as well as personal characteristics like academic self-efficacy. Therefore, the present study also examined the mediate effect of academic engagement on the relationship between academic self-efficacy and academic achievement.

## 2. Objectives

The objectives of the study are:

1. To determine relationship between academic self-efficacy, academic engagement and academic achievement of respondents
2. To determine the mediating affect of academic engagement on the relationship between academic self-efficacy and academic achievement of respondents.

## 3. Hypotheses

- H<sub>a1</sub>: Academic self-efficacy is positively related to academic achievement among respondents.  
 H<sub>a2</sub>: Academic self-efficacy is positively related to academic engagement among respondents.  
 H<sub>a3</sub>: Academic engagement is positively related to academic achievement among respondents.  
 H<sub>a4</sub>: Academic engagement mediates the relationship between academic self-efficacy and academic achievement among adolescents.

## 4. Methodology

### 4.1. Data collection

Data for the analyses selected from student's high schools in Tehran by a cross-sectional research design. A proportional stratified random sampling procedure taking into account the total population in each state based on north and south was employed to obtain a total of 382 high school students in Tehran, ranging in the age group of 15-18 years. This survey used a questionnaire technique for data collection, which was conducted in the high schools.

## 5. Instrumentation

### 5.1. Academic self-efficacy

The Morgan-Jinks Student Efficacy Scale (1999) was designed to gain information about student efficacy beliefs that is related to school success. The

Academic Self-efficacy Scale consists of 30-items with three subscales such as: talent (15 items), context (9 items), and effort (6 items). It is rated on a five point Likert scale ranging based on 1=never, 2= occasionally, 3= sometimes, 4= usually and 5= always. The score for academic self-efficacy was calculated by summing up the scores for the 30 items, after reversing the scores for 9 items (4, 6, 15, 17, 19, 21, 23, 25, and 28). The total scale score ranged from 30 to 150, with high score indicating high academic self-efficacy among respondents. Morgan-Jinks (1999) reported reliability results from the academic self-efficacy with Cronbach coefficient alpha values of .80.

### 5.2. Academic engagement

Academic engagement was measured using Academic Engagement Scale (AES) by Short, Fleming, Guiling, and Roper (2002). The AES was developed by Short, Vowels, and Robinson (2002). The AES has 40 items with three subscales. The subscales are cognitive engagement (10 items), behavioral engagement (15 items), and affective engagement (15 items).

A five-point Likert scale from 1= never, 2= seldom, 3= sometimes, 4= often and 5= always was used to rate the items. The score for AES was obtained by summing up the scores for the 40 items after reversing 11 items (items 7, 8, 12, 14, 15, 18, 19, 20, 26, 29 and 34). The total scale score ranged from 40 to 200, with high score indicating high academic engagement among respondents. The AES has demonstrated respectable psychometric properties ( $\alpha = .94$ ).

### 5.3. Academic achievement

Respondent's academic achievement was measured by using cumulative grade point average (CGPA) obtained by students in the academic year of 2011-2012. According to the rules of the Ministry of Education in Iran, the range of academic achievement (GPA) is from 0 to 20, which can be categorized into four levels: fail (scores of 0-9), weak (scores of 10-14.99), moderate (scores of 15-16.99), and excellent (scores of 17-20). In the present study, the cumulative grade point average (CGPA) was utilized in differently. High scores mean high academic achievement.

## 6. Data analysis

### 6.1. Descriptive findings

There were equal number of male (50%) and female (50%) students who were involved as respondents of the study. The mean age of the respondents was 14.50 years ( $SD = 1.21$ ). Also, more than half of the respondents reported high academic self-efficacy (63.3%), high engagement in school activity and homework (59.13%), and high academic achievement (51.4%).

### 6.2. Correlation Findings

The Pearson correlation analysis was conducted to examine the relationships academic self-efficacy, academic engagement and academic achievement. The results will be discussed according to objectives and hypothesis. As shown in Table 1, there was a high positive significant relationship between academic self-efficacy and academic achievement ( $r = .503$ ,  $p < .01$ ). The positive correlation coefficient indicates that an increase in the score for academic self-efficacy is followed by an increase in the adolescents' academic achievement. Adolescents with higher academic self-efficacy were more likely to perform better in academic activities. Also, there was a high positive significant relationship between academic self-efficacy and academic engagement ( $r = .59$ ,  $p < .01$ ). The positive correlation coefficient indicates that an increase in the score for academic self-efficacy is followed by an increase in the adolescents' academic engagement. Adolescents with higher self-efficacy were more likely to engage better in academic activities.

Finally, the result of the Pearson correlation analysis show that there was a significant positive relationship between academic engagement and academic achievement of adolescents ( $r = .44$ ,  $p < .01$ ). This means that respondents who were highly engaged in school activities, reported higher academic achievement. The strength of correlation between academic engagement and academic achievement is strong.

**Table 1: Relationship between Variables**

	Variables	X1	X2	Y
X1	Academic self-efficacy	1		
X2	Academic Engagement	.59**	1	
Y	Academic Achievement	.503**	.44**	1

### 6.3. Mediation Analyses

A series of Multiple Regression analyses were conducted to explore the mediating effect of academic engagement on the relationships between academic self-efficacy with academic achievement. The mediation test examines the indirect effect of predictor (X) on the outcome (Y) variable through mediator variable (Z). The present study follows the guideline proposed by Baron and Kenny (1986) to test the mediation effect of a mediator on the relationship between the independent and dependent variables. According to Baron and Kenny (1986), there are four steps in establishing mediation:

*Step 1: There must be a significant relationship between the predictor and the outcome variable.*

*Step 2: The relationship between the predictor and the hypothesized mediator is significant.*

*Step 3: The hypothesized mediator is significantly related to the outcome variable*

when both the IV and the mediator are treated as predictors and DV as the outcome variable. Step 4: When the assumptions at step 1 to 3 are fulfilled, the mediation test is conducted (step 4). The IV and mediator are treated as predictors and DV as the outcome variable. To establish that the mediator variable completely mediates the relationship between IV and DV, the unstandardized coefficient (path  $c'$ ) should be zero.

At step 4, if there is a mediation effect, the strength of relationship between the predictor and the outcome is reduced after controlling for the effect of

the mediator. Figure 1 shows the mediation model of the relationship between the independent variables and the outcome variable. Path  $a$  indicates the relationship between the independent variable and the mediator. Path  $b$  refers to the relationship between the mediator and the outcome variable. Path  $c'$  indicates the relationship between the independent variable and the outcome variable after controlling for the mediator. According to Baron and Kenney (1986), it is preferable to use unstandardized coefficients in mediating analyses. This is supported by Dugerd, Todman, and Strains (2010).

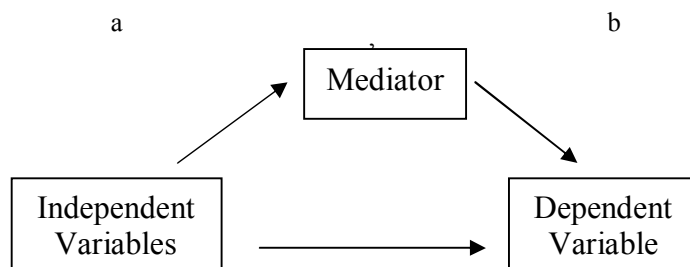


Figure 1: Mediation Model (Center)

When the results shown are consistent with the mediation model (partial or complete mediation), Sobel test was conducted to confirm the significant effect of the mediation. Partial mediation means that path  $b$  (relationship between the mediator and the outcome variable) is significant after controlling for independent variable; and path  $c'$  is still significant. Complete mediation means that the measured effect in path  $c'$  (relationship between independent and the dependent variable after fixing the mediator variable) is zero or at least non-significant (Dugerd, Todman, & Strains, 2010).

Table 2 shows that there was a direct significant effect of academic self-efficacy on academic achievement ( $B=.112$ ,  $SE=.004$ ,  $t=14.321$ ,  $p<.05$ ) and academic engagement ( $B=0.149$ ,  $SE=.029$ ,  $t=13.119$ ,  $p<.05$ ). The relationship between academic engagement (mediator) and academic achievement

was also significant ( $B=.059$ ,  $SE=.003$ ,  $t=17.433$ ). The results of multiple regression analysis at Step 4 implied that academic engagement partially mediates the relationship between academic self-efficacy and academic achievement ( $Beta=.032$ ,  $SE=.008$ ,  $t=6.345$ ,  $p<.05$ ). The summary of the results is presented in Figure 2, the amount of mediation was obtained by subtracting the regression coefficient (Academic self-efficacy  $\rightarrow$  Academic achievement) in the fourth regression (when academic engagement controlled) from the regression coefficient (Academic self-efficacy  $\rightarrow$  Academic achievement) in the first regression (with academic engagement not controlled). The results of the Sobel test showed that the indirect effect of the academic self-efficacy on the academic achievement through the academic engagement is significant ( $Z=6.4350$ ,  $P<.05$ ).

Table 2: Relationship between academic self-efficacy and Adolescents' Academic Achievement Mediated by Academic Engagement

Step	I V	D V	B	SE	Beta	t
1	Academic Self-efficacy	Academic Achievement	.112**	.004	.650	14.321
2	Academic Self-efficacy	Academic Engagement	.149**	.029	.785	13.119
3	Academic Engagement	Academic Achievement	.059**	.003	.699	17.433
4	Academic Self-efficacy	Academic Achievement	.032**	.008	.264	6.345
	Academic Engagement		.033**	.004	.492	7.819

Note: B= Unstandardized coefficient; Beta= Standardized coefficient

\*\* $p<.05$



## 7. Discussion and conclusion

The first purpose of this study was to examine associations among academic self-efficacy, academic engagement and academic achievement among Iranian students. Results of bivariate correlations reflected a strong significant association between academic engagement and academic achievement ( $r=.69$ ,  $P<.05$ ). This indicated that students with high school engagement perform well academically. The present finding is consistent with the finding of past studies (Fallon, 2010; Haney, 2010; Wang & Holcombe, 2010; Sbrocco, 2009; Flower & Flower, 2008; Stewart, 2007; Sirin & Sirin, 2005) which concluded that school engagement is closely related to academic performance. Children feel that they have the attention and support of teachers and parents in their academic and school activities, they will naturally develop a special sense of belonging and attachment to both school and school-related activities, including academic activities. Thus, there is a tendency for such children to achieve higher grades and generally show better academic achievements. Also, students who value their education and have clear ideas about goals they wish to achieve will exhibit a desire for status attainment and be higher performing students (Carbonaro, 2005).

Also, significant positive correlation was found between academic self-efficacy and academic achievement ( $r=.65$ ,  $P<.05$ ). The result of the present study is in line with the finding of past studies (Nasirian et al., 2011; Gold, 2010; Carroll et al., 2009; Henry, 2008; Mohsenipour, 2005; Liew et al., 2008; and Ross, 2008). Having a strong sense of self-confidence brings about many positive outcomes in students: they know how to plan and implement their tasks and be more productive; they are confident about handling challenging tasks, put in greater effort, are more persistent, set high but achievable targets for themselves, feel less anxiety, are more effective in their life strategies, are cognitively efficient and generally achieve a higher level of achievement (Lodewyk & Winner, 2005). Students' self-efficacy creates change in their achievement goals and students with high self-efficacy adopt mastery and performance-approach goals while those low in self-efficacy tend to prefer performance-avoidance goals (Liem, Lau & Nie, 2008). Self-efficacy theory stipulates that students with low self-efficacy may underperform academically due to their lack of confidence in their ability to succeed, regardless of effort (Bandura, 1995).

Finally, there was a high positive significant relationship between academic self-efficacy and academic engagement ( $r=.78$ ,  $p<.01$ ). The result of this study is consistent with Hill (2010) which found

that academic self-efficacy has a positive relationship with academic engagement. Self-efficacy has been related to the quantity of effort and willingness to persist at tasks. According to Linnenbrink and Pintrich (2003), students with self confidence in their abilities tend to persist and make the extra effort even when faced with difficult challenges. On the other hand, those with low or no self-belief tend to give up more easily even if they have the required skills or knowledge because they lack that belief in their own ability to succeed. When students have a poor level of academic self-belief, the result could be poor involvement in the academically-related tasks they have to perform like reading assignments, homework, and studying (Attaway & Bry, 2004). It is the opinion of Attaway and Bry that when there is poor engagement in academic-related tasks, there tends to be poor academic performance.

The second and main purpose of the current study was to examine the mediating effect of academic engagement on the relationship between academic self-efficacy and academic achievement. The results of multiple regression analysis at Step 4 implied that academic engagement mediates the relationship between academic self-efficacy and academic achievement. Based on Bandura's social cognitive theory (1997), students with a higher level of self-efficacy exhibit greater effort, persistence and resilience in the face of adverse situations. As a result of these influences, self-efficacy belief is a strong determinant of the level of accomplishment that students finally attain. Consequently, self-efficacy plays a key role in setting the course of intellectual development and operates as an important contributor to academic success. Adolescents who are persistence and effortful may engage more seriously in academic activities that promotes better academic performance (Alfassi, 2003; Bandura, 1995).

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