

Student Engagement, Academic Self-efficacy, and Academic Motivation as Predictors of Academic Performance

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ABSTRACT The research described in this paper aimed to evaluate the extent to which academic performance is affected by student engagement (students' involvement in school activities and commitment to the school's mission and rules), academic self-efficacy (the students' sense of their own capabilities), and academic motivation (the students' desire to increase their academic performance). The results of the study, which was conducted with the participation of 578 middle and high school students, suggest that cognitive engagement, one of the sub-dimensions of school engagement, predicts academic performance; however, emotional and behavioral engagement does not predict academic performance. A sense of academic self-efficacy and academic motivation, however, do predict academic performance. Moreover, the sense of self-capability and related motivations of students, as well as the sense of the purpose for their learning are significant variables affecting their academic success.

INTRODUCTION

A review of the literature revealed that student engagement has been studied together with various concepts. Examples of these concepts include school identity, school socialization style, bullying, life satisfaction, self-determination, proficiency, staying connected, academic motivation, self-efficacy, and academic performance. Student engagement has also been studied in the contexts of both online learning and traditional classroom environments, and has been supported with intercultural research.

Academic motivation is one concept that has been studied with respect to student engagement. Skinner et al. (2009) consider student engagement to be an outcome of a motivational process. Additionally, without engagement, no psychological course is effective in relation to learning and development. Dörnyei (2000) mentions that students, even those with high levels of self-efficacy, have difficulty in comprehending the whole unless they are actively engaged in the learning. When Lin (2012) explained the relationship between academic motivation and student engagement, he considered academic motivation to be a perception and a kind of discipline that positively or negatively affects a person's behaviors. In addition, academic motivation, together with student engagement, is affected by a person's objectives, prior experiences, cultural background, and the teachers' and peers' opinions of the person. In a study in which

the relationship between academic performance and student engagement was examined, Patrick et al. (2007) explained the effects of these variables on academic performance. Teacher support, a developed common respect, engagement with a task, and peer support were discovered to have positive relationships with motivation values, such as students' success objectives and self-efficacy perceptions. In this study, a classroom climate supporting academic motivation and student engagement mediators is changeable. We can see positive results resulting from academic motivation and student engagement. Frey et al. (2009) found that middle and high school students with high levels of student engagement and academic motivation tend to have much less aggressive beliefs and behave much less violently. When teacher and peer support is combined with a school climate that promotes social values, student motivation with respect to having positive social objectives and classroom behaviors increases (Wentzel 2003). As a result, academic performance also increases (Connell et al. 1994). These results indicate that academic motivation and student engagement are effective in preventing problems that are likely to occur.

Another term studied in relation to student engagement which also has various definitions, is self-efficacy. One definition describes it as a person's belief to overcome a situation (Walker and Greene 2009). Bandura (1977) defines the term as the belief in one's ability to produce de-

sired academic results. If a student believes he can complete a task, he will have stronger engagement with this task. Conversely, if students have little confidence knowing that they can complete a task, they consider the task to be unnecessary, and consequently do not want to spend time and energy on it. As a result of this, they do not engage in such task. After Bandura presented his definition, the relationship between self-efficacy and academic success was noted (Zimmerman and Bandura 1994). According to research results, students with high levels of engagement have more self-efficacy than those with lower levels of engagement; these students were observed to have spent more time on learning (Eccles et al. 1993). Based on these related findings, self-efficacy is effective in reaching objectives (Greene et al. 2004) and in increasing academic success (Turner et al. 2002). Students with high levels of self-efficacy demonstrate positive social behaviors, both directly and indirectly (Bandura 2006), and prefer deep learning to superficial learning (Liem et al. 2008). In research studies of student engagement and self-efficacy, these variables were seen to be highly related (Majer 2009; Thijs and Verkuyten 2008). The relationship between student engagement and self-efficacy is more significant in high school students; identity development and increased self-determination were shown to be reasons for this difference. Additionally, self-efficacy is less effective on academic performance in primary and middle school students (Multon et al. 1991).

Academic success positively affects students in a variety of ways: Productivity and success, intellectual skills, personal motivation, the effort on the work, having a prestigious job, and career dynamism are positively related to academic success (Pascarella and Terenzini 2005). Ransdell (2001) discussed the variables affecting academic performance. Examples of these variables were given as verbal and quantitative skills, self-confidence, test-solving skills, willingness to study, family support, and time spent on classroom activities. Tinto (1993) suggests that, if students exert effort on their academic work, spend time on studying, and take pains to develop their skills and behaviors-in other words, if they engage-they will be successful. According to the relevant research, one of the most important predictors of academic success is student engagement. Also, student engagement is a predictor of school behaviors (Finn 1993; Mounts

and Steinberg 1995; Voelkl 1995). Additionally, students with high levels of engagement have higher GPAs and test scores (Goodenow 1993) and are less likely to drop out (Croninger and Lee 2001), whereas students with low levels of student engagement can have long-term issues, such as spoiling behaviours in class, absenteeism, and dropping out (Lee et al. 1997; Steinberg et al. 1996).

Purpose of the Study

The research aimed to explore the relations among student engagement, academic performance, self-efficacy, and academic motivation in middle and high school students and to reveal whether student engagement, self-efficacy, and academic motivation predict academic performance.

METHODOLOGY

This research employed correlational design to see the relations among variables in the present study. In a correlational design, variables are measured and the data obtained from the measurement process is analysed to see whether the variables are related.

Research Group

This research was conducted during the spring semester of the 2013–2014 academic year with 578 students (354 girls - 62% and 224 boys - 38%), who enrolled in Grades 7 through 11, and from a variety of middle and high schools in 4 cities in Turkey. The students' age means are 16.7.

Instrumentation

Information Request Form

Students were asked to note their school name, grade, and gender for the purpose of collecting demographic information, as well as their GPA for the purpose of evaluating their academic performance.

Student Engagement Scale

This scale was developed by Dogan (2014) and conducted on 400 middle and high school students. The scale, consisting of 31 items and 3

sub-dimensions (cognitive, emotional, and behavioral engagement), accounted for 46.74 percent total variance. In the reliability study, internal consistency coefficients were .91 for the whole scale, .88 for cognitive engagement, .88 for emotional engagement, and .86 for behavioral engagement. Additionally, the test-retest reliability study resulted in a correlation of .77 between two studies. Another process was to use an upper 27 percent -lower 27 percent method, which demonstrated that the results differed for each of the items. In student engagement scale as a 5-point Likert Scale, 5 means definitely agree, while 1 mean definitely disagree. As a result of the analysis in SPSS 19, Scale's Cronbach Alpha value was calculated .86.

Academic Motivation Scale

This was developed by Bozanoglu (2004) and conducted on 757 high school students. The scale consists of 20 items and accounts for 42.2 percent total variance. It features 3 factors: "self-discovery," "using the knowledge," and "discovery." Internal consistency changes between .72 and .88 in both factors and total. In an upper 27 percent -lower 27percent comparison analysis, all the items differed, and the test-retest reliability study resulted in a reliability score of .87. As a result of the analysis in SPSS 19, Scale's Cronbach Alpha value was calculated .92.

Expectancy of Self-efficacy for Adolescents Scale

This scale was developed by Muris (2001) and was translated and adapted into Turkish by Çelikkaleli et al. (2006). The scale is a 5-point Likert Scale consisting of 23 items and 3 factors. These factors are "Academic Self-Efficacy Expectancy", "Social Self-Efficacy Expectancy," and "Emotional Self-Efficacy Expectancy." The correlation between the academic self-efficacy expectancy subscale, the social self-efficacy expectancy, and emotional self-efficacy expectancy was found to be .39 and .34, respectively; the correlation between social self-efficacy expectancy and emotional self-efficacy expectancy was .42. Academic self-efficacy expectancy and the whole scale correlation were calculated as .74. In the reliability study of the scale, the internal consistency coefficient was .64, and the test-retest correlation was .77. In this research, all the students in the sample group completed the "Expectancy of Self-efficacy for Adolescents Scale,"

and in the analysis, academic self-efficacy expectancy subscale data were evaluated. As a result of the analysis in SPSS 19, Scale's Cronbach alpha value was calculated .91.

Data Analysis

The analysis used the Pearson product-moment correlation coefficient (r) to calculate the relationship between the variables, and used multiple regression analysis to identify whether student engagement sub-dimensions predict academic performance variance. Simple regression analysis was used to identify whether academic self-efficacy and academic motivation predict academic performance.

Before analyzing the data, a test was conducted to determine whether multiple regression analysis would be applicable. Durbin-Watson (D-W) statistics were used to test the autocorrelations between variables, and the result was $D-W = 1.57$. As this value shows a change between 1.5 and 2.5, it can be assumed that there are no autocorrelations between the variables (Field 2005). On the other hand, to identify outliers, data 3 values which are lower and higher than the average standard deviation were omitted from the data set. No outliers were found in the data set. For the analysis, SPSS 19 software was used.

RESULTS

In this part of the research, findings included a relationship between the students' academic performance and student engagement sub-dimensions (cognitive, emotional, and behavioral), academic self-efficacy, and academic motivation, as well as how these variables predict academic performance.

Descriptive findings and correlation coefficients which are related to students' academic performance, cognitive, emotional, behavioral engagement, academic self-efficacy, and academic motivation are shown in Table 1.

An evaluation of Table 1 reveals that the academic performances of the students have a positive relationship with cognitive ($r = .36$) and emotional engagement ($r = .19$), with academic self-efficacy ($r = .50$), and with academic motivation ($r = .11$). One can also see that academic performance has a meaningful relationship with behavioral engagement ($r = .13$) ($p < .01$). These findings indicate that academic performance, cognitive and emotional student engagement, academic self-efficacy, and academic motivation are positively changing variables, whereas the

Table 1: Descriptive findings and correlation coefficients of academic performance, subdimensions of student engagement (cognitive, emotional, and behavioral), academic self-efficacy, and academic motivation

Variables	Mean	Ss	1	2	3	4	5	6
1-Academic performance	72.88	12.65	1					
2-Cognitive engagement	45.47	8.93	.36*	1				
3-Emotional engagement	38.46	7.96	.19*	.43*	1			
4-Behavioral engagement	20.85	4.71	.13*	.33*	-.29*	1		
5-Academic self-efficacy	28.49	4.92	.50*	.59*	.39*	-.25*	1	
6-Academic motivation	66.59	8.66	.11*	.48*	.35*	-.21*	.40*	1

*p < .01, n = 578

behavioral dimensions of student engagement and academic performance are negatively changing variables.

Findings related to student engagement as a predictor of academic performance are shown in Table 2.

As seen in Table 2, a multiple regression analysis of how students' cognitive, emotional, and behavioural engagement predict the academic performance variance shows that only the cognitive engagement variable is a meaningful predictor. Cognitive engagement, as a sub-dimension of student engagement, explains the .134 percent academic performance variance [$F_{(3-574)}$

= 29.575, p < .01]. However, emotional engagement (t = .962, p > .05) and behavioral engagement (t = .003, p > .05) did not have any meaningful explanations for the prediction of academic performance (t = 1.554, p > .05).

Findings related to the prediction of academic performance with academic self-efficacy are shown in Table 3.

As seen in Table 3, students' academic self-efficacy beliefs were seen as a meaningful predictor for the academic performance variance. Outcomes show that academic self-efficacy explains the .254 percent academic performance variance [$F_{(1-576)} = 195.717, p < .05$].

Table 2: Multiple regression analysis results on how student engagement subdimensions (cognitive, behavioral, and emotional) predict academic performance

Variables	R	ÄR ²	B	SH _B	â	t
Stable	-	-	48.031	4.542	-	10.575*
Cognitive engagement	.366	.134	.490	.063	.346	7.819*
Emotional engagement	-	-	.067	.069	.042	.962
Behavioral engagement	-	-	.000	.112	.000	.003

$F_{(3-574)} = 29.575, *p < .05$

Table 3: Simple regression analysis results related to prediction of academic performance using academic self-efficacy

Variables	R	ÄR ²	B	SH _B	â	t
Stable	-	-	35.995	2.675	-	13.454*
Academic self-efficacy	.114	.254	1.295	.093	.504	13.990*

$F_{(1-576)} = 195.717, *p < .001$

Table 4: Simple regression analysis results related to prediction of academic performance using academic motivation

Variables	R	ÄR ²	B	SH _B	â	t
Stable	-	-	61.792	4.063	-	15.209*
Academic motivation	.366	.013	.166	.061	.114	2.752*

$F_{(1-576)} = 7.573, *p < .05$

Findings related to the prediction of academic performance using academic motivation beliefs are shown in Table 4.

As seen in Table 3, a simple regression analysis of how students' academic motivation beliefs predict academic performance variances shows that academic motivation is meaningful for academic performance variables. Academic motivation was seen to explain the 0.13 percent academic performance variance [$F_{(1-576)} = 7.573$, $p < .05$].

DISCUSSION

In this research, the relationship between academic performance, student engagement (cognitive, emotional, and behavioural), academic motivation, and self-efficacy was analysed in middle and high school students; a study to determine whether student engagement (cognitive, emotional, and behavioral), academic motivation, and self-efficacy predicts academic performance variances in adolescents followed the analysis.

The first findings of the research indicated that academic performance can be determined by cognitive engagement, and the sub-dimension of student engagement, but cannot be determined by the emotional and behavioural sub-dimensions. In the correlation analysis additionally made after these findings, cognitive engagement and academic performance were related at a medium level, while behavioral, emotional engagement and academic performance were seen to have low and meaningful levels. Findings are partially consistent with research results (Hepinger 2004; Rotermund 2011; Stafford 2011; Tinto 1993). In a structural equation modeling designed by Rotermunda, cognitive and behavioural engagement predicted success directly, and emotional engagement predicted success indirectly. The studies by Wang and Holcombe (2010) and Wang et al. (2015) demonstrated that success is predicted by all sub-dimensions of student engagement: cognitive, emotional, and behavioural while Wang et al. (2015) found opposite results to the result of this study which suggests that emotional engagement predicted academic success directly. One likely reason for the discrepancy between the present research findings and the literature includes the fact that the present study encompassed a wider target population, including both middle and high school students. A review of the literature demonstrates that some previous studies were conducted with

either high school or middle school students. For example, the study by Wang and Holcombe (2010) included only middle school students, whereas Hepinger's study included only high school students. Nevertheless, most of these studies conducted abroad included a wide range of work groups. For example, Rotermund's (2011) study was conducted with more than 16,000 high school students, and Stafford (2011) conducted his study with 1,549 9th- and 10th-grade students; in contrast, 578 participants participated in the current research. The researcher anticipates that, if this study had been conducted with more participants (similar to those mentioned), it may have led to much different findings.

Our literature also revealed some differences between the behavioral engagement observed in our study and the behavioral engagement reflected in studies described in the literature. Behavioral engagement, often referred to as participation in school activities, was considered in the scale developed for this study as "regular attendance, being loyal to school rules, and not getting into trouble in school." In terms of this definition, an evaluation of the findings of this study suggests that regular attendance and obedience to school rules, only, does not bring about success. In the scale developed for this research, emotional engagement items are coherent to the literature. It is interesting to note, however, that the literature points to a positive relationship between emotional engagement and academic performance or success, but the present research findings contradict that finding. According to research findings, having positive feelings towards teachers, management, and school is not enough to be successful. A general evaluation about student engagement demonstrates that regular attendance, obeying rules, and having positive feelings towards teachers, management, and school, alone, is not enough to be successful or to have a satisfactory academic performance. An exploratory factor analysis revealed that, with respect to cognitive engagement, the items with the highest factor-loading values are "I spend a lot of time on my studies and homework," "I give all my attention to the lesson in the class," "I do my homework (work about the school) on time," and "I work as hard as I can for my lessons." It is not surprising that the contents of these values result in success. Doing of homework and giving attention to the lessons are seen as the most critical criteria for success.

Other findings from the research suggest that self-efficacy predicts academic performance and

that there is a moderate relationship between self-efficacy and academic performance. In reviewing the literature, the researcher found several studies suggesting that self-efficacy predicts academic performance and that the two have a correlational relationship (Adeyemo 2007; Baker 2015; Brown et al. 1989; Carroll et al. 2009; Chermers et al. 2001; Clay-Spotser 2015; Feldman and Kubota 2015; Galla et al. 2014; Gore 2006; Hampton and Mason 2003; Lent et al. 1986; McIlroy et al. 2015; Mone et al. 1995; Motlagh et al. 2011; Pajares and Johnson 1996; Wang and Neither 2015; Wood and Locke 1987; Yazici et al. 2011; Yusuf 2011; Zimmerman et al. 1992). A review of the literature confirms that the findings of the research can be regarded as expected. Students' strong beliefs in their academic capacities result in academic performance. Additionally, self-efficacy is the strongest predictor when compared with other academic performance variance predicting variables.

Finally, the research findings suggest that academic motivation meaningfully predicts academic performance and these two have a positive and meaningful relationship. The results of the studies described in the literature are in agreement with this suggestion (Amrai et al. 2011; Bakhtiarvand et al. 2011; Guay et al. 2010; Lee et al. 2012; Önder et al. 2014; Soufi et al. 2014; Wormington et al. 2012). Based on the definition of academic motivation by Tucker et al. (2002) as "the element determining student's investments and engagement", it is reasonable to assume that academic motivation predicts academic performance. An understanding of students' academic motivation levels is considered to be a crucial factor in achieving success.

CONCLUSION

An evaluation of the research findings from a holistic perspective made us to conclude that self-efficacy is the strongest predictor of academic performance, or academic success, of middle and high school students. The present research also suggested that academic motivation and cognitive engagement, a subdimension of student engagement, predicts academic performance. It also made us to know that the two are related. Students who believe in their self-efficacy and who are able and willing to act academically will be able to motivate themselves to learn

and thereby fulfill the cognitive activities required to help them become successful.

RECOMMENDATIONS

The following recommendations can be made to the researchers;

- ♦ Many researches with big samples need to be conducted in order to make a very clear distinction between these variables.
- ♦ Teachers should provide positive oral inspirations to support students' academic self-efficacy.
- ♦ Teachers should show positive attitudes which helps to motivate students in learning contexts.
- ♦ The results showed that while affective engagement and behavioral engagement did not make a contribution to prediction of academic performance, cognitive engagement made a contribution to prediction of academic performance. In this regard, it needs to be given more attention to activities relevant to cognitive engagement in learning settings.
- ♦ The results also showed that academic self-efficacy and academic motivation jointly made positive contributions to the prediction of academic performance. Because of this, students are required to gather experiences related to increasing academic motivation and academic self-efficacy in schools.

LIMITATIONS OF THE RESEARCH AND DIRECTIONS FOR FUTURE RESEARCH

There were some limitations in the present research. Subsequent researches can be planned to analyze variables predicting academic success which has to be conducted on either high or middle school, but not jointly. Again, as in the examples in literature, planning and applications of research with higher numbers of participants can be beneficial if the results are compared with other researches conducted abroad. To better understand the concepts and also reveal the relationships which exist among other variables, school engagement, concepts related to academic motivation, self-efficacy and academic performance can be evaluated with associative studies. Based on these limitations, the research was conducted in Mugla, Istanbul, Manisa and Bolu. It would be beneficial to plan a research that includes other territories and cities in order to in-

crease academic performance, both scientifically and for application purposes.

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