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Academic Self-Efficacy, Study Skills and Academic Achievement: A Serial Mediation Model

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Abstract

Educational achievement is crucial determinant of one's future career opportunities and plays a critical role in the psycho-social development. Identifying the factors that influence academic achievement is essential for developing effective interventions and strategies to enhance students' learning outcomes. This study aims to investigate the serial mediation role of study skills (systematic and organized study, and effective homework and exam preparation) in the relationship between academic self-efficacy and academic achievement. A group of 392 secondary school students completed the Academic Self-Efficacy Scale as well as two sub-scales from the Study Skills Scale: systematic and organized study, and effective homework completion and exam preparation. The findings of the study revealed positive correlations among all variables. Furthermore, the serial mediation analysis demonstrated that the skills of systematic and organized study, and effective homework and exam preparation serially mediated the relationship between academic self-efficacy and academic achievement. These results suggest that interventions, implementations, and policies that aim to strengthen students' perception of academic self-efficacy and improve their study skills can contribute to the academic achievement and other student outcomes.

Key Words

Academic self-efficacy • Study skills • Academic achievement

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Introduction

Today, teachers, policy-makers, parents and even students themselves are aware of the fact that academic achievement means more than being successful at exams and getting high grades at school. Selective high-schools and universities not only in Türkiye but also in many other countries accept students according to their diploma grade and/or the national exam results (Gölpek & Uğurlugelen, 2013). Because of this reason, in today's competitive societies, academic achievement is considered to be one of the most crucial determinants of one's school success, which in turn affects their level of welfare (Spinath, 2012). The significance placed on academic achievement can impact students' psychosocial development and mental health by leading them to place a high value on their personal performance and base their self-worth on their school success, especially during adolescence. Previous research findings indicate that a high level of academic achievement is related to indicators of mental health such as a more positive self-concept (Möller et al., 2020) and better psychological well-being (Bücker et al., 2018). Conversely, a low level of academic achievement is related to inharmonious emotional and behavioral reactions such as depression (Huang, 2015), school dropout and drug abuse (Crum et al., 1998). Moreover, failure at school can have a lifelong negative influence (Kern & Friedman, 2009). Therefore, identifying the cognitive, psychological, educational and environmental antecedents of academic achievement is a prior goal of educational psychology (e.g., Hattie, 2009; Pérez et al., 2012; Veas et al., 2015). In recent years, researchers have been focusing on psychological factors that are potentially prone to being shaped by educational practices such as academic self-efficacy (for a review, see Hattie, 2009).

Self-efficacy is rooted in Social Cognitive Learning Theory and is defined as an individuals' belief in their capacity to meet the requirements necessary for achieving a specific goal or a previously-defined level of performance (Bandura, 1994). Social Cognitive Theory embraces the concept of personal agency, emphasizing that individuals contribute causally to their behaviors through their beliefs, thoughts, and choices (Bandura, 1989). Therefore, possessing the requisite knowledge and skills alone does not necessarily propel people toward a particular goal; they also need to have the belief that they can succeed. As a result, researchers from various fields have shown interest in examining the relationship between self-efficacy measures across numerous functional areas and the corresponding performance indicators (Haddad & Taleb, 2016; Li & Wang, 2010). The reason for this distinction is that self-efficacy is not a unitary structure, but it is a belief of capacity emerging in different fields, and competence specific to a field is an important predictor of success in the same field (Bandura, 1997).

In the field of education, the focus is often on the scholastic aspect of self-efficacy beliefs. Academic self-efficacy means students' confidence in their own skills to fulfil academic duties in educational settings and reach a high level of success (Zimmerman, 1995). Previous studies reveal that academic self-efficacy is closely related to desired educational outcomes, especially academic success (Carroll et al., 2009; Kim, 2014; Lee et al., 2014; Yusuf, 2011). As an illustrative instance, a comprehensive inquiry carried out by Honicke and Broadbent (2016) yielded findings that pointed to the existence of a moderate-level correlation between academic self-efficacy and academic attainment. Furthermore, research has shown that students' efficacy beliefs contribute significantly and uniquely to

their learning success, beyond other robust determinants of academic performance such as intelligence and personality traits (Zuffianò et al., 2013).

Having significant implications on students' cognitive, emotional and motivational processes and choices, academic self-efficacy belief provides a solid foundation for academic achievement (Schunk & DiBenedetto, 2016). Students with strong academic self-efficacy beliefs have high goals, and they study hard to reach these goals, show more resistance in the face of difficulties and are more motivated to learn (Multon et al., 1991). However, those with a low academic self-efficacy are more prone to avoid academic tasks as they do not trust their academic skills, and so they can miss out potential development opportunities (Seifert & Sutton, 2009). They give up easily and experience negative feelings such as anxiety and stress in the face of failures (Pajares & Schunk, 2002). Finally, they end up having more failures. Academic self-efficacy belief is recognized as a crucial motivational construct that helps students to reach their potentials and motivate them to put more effort in what they are doing (Schunk, 1991; Zimmerman, 2000). In this context, it is conceivable to posit that academic self-efficacy may exert an influence on the cultivation of students' study habits and the development of their academic skills.

In the broadest sense, study skills refer to students' knowledge about strategies, methods and techniques on planning, implementing and evaluating the learning process as well as the skills to use them (Credé & Kuncel, 2008; Gettinger & Seibert 2002). These skills include a wide range of cognitive, metacognitive and/or behavioral techniques and strategies such as planning and monitoring the learning process, effective time management, active listening, note-taking, repeating and summarizing information, and using keywords that will help to remember, and they are divided into different categories (Carns & Carns, 1991; Wong, 2015). The focus of the current study is on two study skill categories that are closely related to learning performance: systematic and organized study, and effective homework completion and exam preparation. Systematic and organized study includes systematic study skills such as reviewing what you learn at school and preparing study plan at home. Effective homework completion and exam preparation, on the other hand, refer to the abilities to employ successful study techniques during learning and exam preparation (Kaner & Kesiktaş, 2008). Knowing about these skills is not sufficient; students should also use them effectively. For instance, repeating information continuously causes one to learn and forget quickly at the same time. On the other hand, intermittent review ensures the permanence of learning (Roediger & Pyc, 2012). Previous research shows that effective use of study skills can significantly improve students' learning performance and contribute to their academic achievement (Fazal et al., 2012; Jansen & Suhre, 2010). For example, at the end of a 11-week program of studying and test-solving strategies administered to primary school students, their exam anxiety decreased, and academic achievement increased (Biedel, 1999). On the other hand, poor study skills can lead to negative consequences such as a low level of academic achievement, a decrease in the motivation to learn, and a high level of stress and anxiety (Credé & Kuncel, 2008).

Rationale for Hypothesized Model and Purpose of the Study

Extensive research has explored the positive effects of academic self-efficacy beliefs on student performance and related psychological constructs such as motivation, self-regulation, and anxiety across diverse learning contexts (e.g., Honicke & Broadbent, 2016; Li & Wang, 2010; Skaalvik et al., 2015). However, the interplay between

academic self-efficacy and students' study skills, especially in the context of predicting academic performance, has received limited research attention. In order to address the existing gap in the literature, this study examines the serial mediation roles of study skills in the relationship between academic self-efficacy and academic achievement, drawing on the perspective of self-regulated learning. Self-regulated learning refers to a metacognitive process that ensures students to regulate their own learning processes to reach learning goals, and so master the learning process (Zimmerman, 2015). This process consists of (1) setting one's own goals, (2) preparing an action plan to reach these goals, (3) monitoring one's own learning process and making the necessary regulations, (4) making use of various cognitive and metacognitive study skills such as organizing and summarizing information, and creating clues (Cheng, 2011; Zimmerman, 2002). Therefore, self-regulated learning involves identifying the most suitable study strategy from among many various alternatives and using it effectively at the same time. Several authors in the field highlight the pivotal role of academic self-efficacy beliefs in the process of self-regulated learning (Usher & Pajares, 2008; Zimmerman et al., 2017). As mentioned before, students with strong self-efficacy beliefs set challenging goals for themselves, use cognitive and metacognitive strategies in the learning process more often, persist more when they encounter difficulties, study harder and preserve their motivation for longer. Therefore, self-efficacy beliefs affect all stages of self-regulated learning process (Pajares, 2002). Considering its significant impact on the self-regulated learning process, it seems possible to suggest that academic self-efficacy beliefs will encourage students to adopt systematic study and exam preparation strategies such as creating a study plan, regular review, preparing for the topic, completing homework, and reviewing their mistakes, and this will in turn contribute to their academic achievement. This study aims to investigate the serial mediation effect of systematic and organized study, and effective homework and exam preparation on the relationship between academic self-efficacy and academic achievement. In this context, the hypothesized model, which was developed based on theoretical implications and findings from previous studies in the literature, is presented in Figure 1.

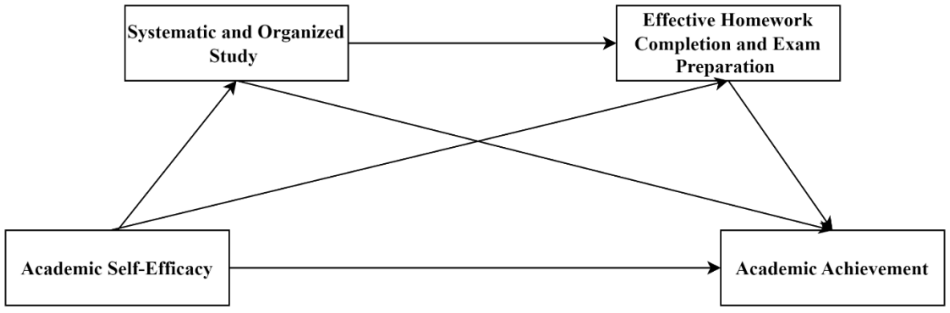

Figure 1. Hypotezised Conceptual Model

Methods

Study Group

This study involved 392 students from four different public middle schools located in Yozgat, Turkey. Of the participants, 207 (52.8%) were female and 185 (47.2%) were male. The grade distribution for the students was 84

(21.4%), 119 (30.4%), 91 (23.2%), and 98 (25%) for the 5th, 6th, 7th, and 8th grades, respectively. The ages of participants ranged between 10-15, with an average age of 12.30 (±1.42).

Procedure

In the initial stage, necessary permissions and consent forms were obtained from all potential participants and their families. The data were collected by the researcher through face-to-face questionnaires administered in the classrooms. Students completed the scales in an average of 30 minutes. Additionally, the present study received approval from the Social and Human Sciences Ethics Committee of Yozgat Bozok University (Date: 18/05/2022, Approval Number: 33/17).

Research Instruments

Demographic Information Form

The participants' demographic information, including age, grade level and gender was collected using a form developed by the researcher.Academic achievement was evaluated based on Grade Point Average (GPA).

Academic Self-Efficacy Scale (ASE)

ASE was initially designed by Jinks and Morgan (1999) to evaluate self-efficacy beliefs of middle school students and later adapted into Turkish by Öncü (2012). The Turkish version of ASE includes three subscales: ability, environment, and quality of education. Participants are asked to rate 21 items on a four-point Likert scale, spanning from 1 (Strongly Disagree) to 4 (Strongly Agree). The cumulative scores on the scale can vary between 21 and 84, with higher scores indicating stronger academic self-efficacy beliefs. In the adaptation study, the Confirmatory Factor Analysis (CFA) demonstrated that the structure of the Turkish version of ASE, consisting of 21 items and three factors, well fit the data. Additionally, Cronbach's alpha coefficients for reliability were reported as .81 for the overall scale (Öncü, 2012). In this study, the Cronbach's alpha coefficient was found to be .80.

Study Skills Scale

This scale was designed by Kaner and Kesiktaş (2008) to assess the study skills of elementary and middle school students. It comprises 55 items designed in a three-point Likert format (1= Never, 2= Sometimes, 3= Always) and includes six subscales: effective homework completion and exam preparation, systematic and organized study, difficulties encountered in learning, arranging the environment, help-seeking, and appropriate in-class behaviours. In this study, only two subscales were utilized: effective homework completion and exam preparation (EHC-EP), which consists of 18 items, and systematic and organized study (SOS), which includes 10 items. The total scores for the EHC-EP subscale can range from 18 to 54. Higher scores indicate that students employ more effective strategies when doing homework and preparing for exams. The potential scores for the SOS subscale can range from 10 to 30. Higher scores suggest that students employ more systematic study skills. In the development study of the scale, it was reported that the six-factor model accounted for 36.41% of the total variance. The effective homework completion and exam preparation subscale explained 9.62% of the overall variance, while the systematic and organized study subscale explained 8.06%. Additionally, the reported Cronbach's alpha coefficients were .89 and .81

for these subscales, respectively (Kaner & Kesiktaş, 2008). In this study, the Cronbach's alpha coefficients for these subscales were found to be .82 and .78, respectively.

Data Analysis

In the preliminary stage, the dataset was initially examined to identify whether there were any missing value or outliers. The rate of missing data for each item was below 5%; therefore, missing data were not removed but were instead imputed using the series mean method. However, 14 outliers detected using the Mahalanobis distance method were excluded from the dataset. Means, medians, standard deviations, and skewness-kurtosis coefficients were calculated for each research variable individually. The Pearson Product-Moment Correlation Coefficient was utilized to analyze the relationships between the study variables. Given the self-reported nature of the data, a Harman's single-factor test was employed to evaluate the potential presence of Common Method Bias. The assumption of normality was evaluated by examining skewness and kurtosis coefficients, while the assumption of multicollinearity was verified through Variance Inflation Factor (VIF) and Tolerance (T) values.

The serial mediation model was investigated using the PROCESS macro (Model 6) within the SPSS (Hayes, 2018). This approach, which is based on an ordinary least squares model and a bootstrapping procedure, offers greater statistical power in mediation analyses compared to the traditional three-step method (Preacher & Hayes, 2008). In this study, the bootstrapping procedure was applied with 5000 bootstrapped samples, and a 95% confidence interval.

Results

Testing for Common Method Bias and Assumptions of Regression

Prior to the main analyses, the dataset was examined for common method bias and assumptions of regression analysis. Harman's single-factor test showed that a unidimensional structure explained only 14.89% of the total variance, indicating the absence of concerns regarding common method bias (Podsakoff et al., 2003). The skewness and kurtosis coefficients were found to be between -2 and +2 for all research variables, indicating that the normality assumption was met (George & Mallery, 2016). Additionally, the VIF values were all below 10 (ranging from 1.28 to 1.50), and the tolerance values were higher than 0.20 (ranging from 0.66 to 0.78). As a result, it was concluded that multicollinearity was not a concern (Büyüköztürk, 2005).

Preliminary Analyses and Pearson Correlations

Table 1 presents the descriptive statistics and Pearson correlations for the research variables. As expected, the results revealed positive correlations among all research variables. Specifically, academic self-efficacy demonstrated positive associations with SOS (r = .39, p < .01), EHC-EP (r = .44, p< .01), and academic achievement (r = .49, p< .01). In addition, SOS showed positive associations with EHC-EP (r = .56, p< .01), and academic achievement (r = .38, p< .01). Finally, EHC-EP showed a significant and positive correlation with academic achievement (r = .41, p< .01).

Table 1

Descriptive Statistics and Bivariate Correlations for Study Variables

Variables	Mean	SD	Skewness	Kurtosis	1	2	3	4
1. ASE	62.49	9.21	.02	.08	-			
2. SOS	20.04	3.67	.02	-.32	.39**	-		
3. EHC-EP	46.33	4.70	-.89	1.54	.44**	.56**	-	
4. GPA	75.62	12.73	.11	.08	.49**	.38**	.41**	-

** p< .01; ASE: Academic sel-efficacy; SOS: Systematic and Organized Study; EHC-EP: Effective Homework Completion and Exam Preparation; GPA: Grade Point Average

Testing the Hypothesized Model and Serial Mediation Effect

The serial mediation effect of SOS, and EHC-EP on the relationship between academic self-efficacy and academic achievement was investigated using Model 6 in the SPSS PROCESS macro. The results of regression analysis were provided in Table 2. The results revealed that the direct effect of academic self-efficacy on academic achievement was statistically significant (β= .371, p<.001). Moreover, academic self-efficacy positively predicted SOS (β= .387, p<.001), which in turn positively predicted academic achievement (β= .154, p<.01). Additionally, academic self-efficacy positively predicted EHC-EP (β= .259, p<.001), which in turn positively predicted academic achievement (β= .161, p<.01). Finally, SOS positively predicted EHC-EP (β= .460, p<.001), suggesting the presence of a serial mediation effect. The visual representation of the serial mediation model, including standardized regression coefficients, was presented in Figure 2.

Table 2

Results of Regression Analysis

Dependent Variable	Predictor Variables	R	R^2	F	β	t
SOS	ASE	.387	.149	68.642	.387	8.285***
EHC-EP	ASE	.609	.371	115.079	.259	5.961***
	SOS				.460	10.557***
GPA	ASE	.557	.311	58.346	.371	7.770***
	SOS				.154	2.962**
	EHC-EP				.161	3.019**

** p< .01, *** p< .0001

The statistical significance of the serial mediation effect was investigated using a bootstrapping procedure with a 95% confidence interval and 5000 bootstrapped samples. The results (Table 3) demonstrated that the total indirect effect of academic self-efficacy on academic achievement via SOS and EHC-EP was statistically significant (*B* = .179, 95% CI [.106, .262]), accounting for 25.87% of its total effect. Specifically, the indirect effect of academic self-efficacy on academic achievement was manifested through three significant mediating mechanisms: (1) through SOS (*B* = .082, 95% CI [.023, .147]), (2) through EHC-EP (*B* = .058, 95% CI [.013, .110]), and (3) through serial mediation involving both SOS and EHC-EP (*B* = .039, 95% CI [.009, .077]). These pathways accounted for 11.85%,

8.38%, and 5.64% of the total effect, respectively. Taken together, these results suggest that both SOS and EHC-EP may play partial mediating roles in the relationship between academic self-efficacy and academic achievement.

Table 3

Unstandardized Direct, Indirect, and Total Effect of Academic Self-Efficacy on Academic Achievement

Effects		*B*	BootSE	95% CI	
				LL	UL
Total effect		.692	.061	.573	.811
Direct effect		.513	.066	.383	.642
Total indirect effect		.179	.039	.106	.262
Indirect effect 1	X → M1 → Y	.082	.032	.023	.147
Indirect effect 2	X → M2 → Y	.058	.025	.013	.110
Indirect effect 3	X → M1 → M2 → Y	.039	.018	.009	.077

X: Academic self-efficacy; M1: Systematic and organized study; M2: Effective homework completion and exam preparation; Y: Academic achievement

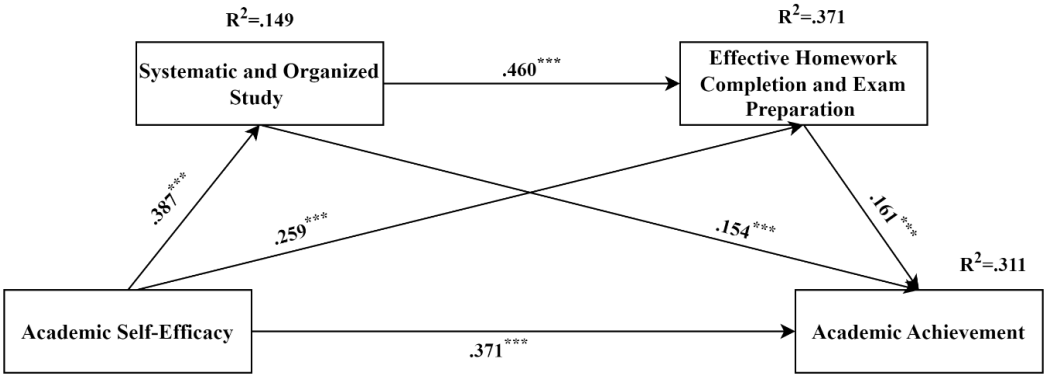

Figure 2. Serial Mediation Model with Standardized Regression Coefficients

Discussion, Conclusion & Suggestions

Educational success is crucial for both individual and social welfare, and it also has a significant impact on students' psychosocial development. Identifying the factors that influence students' learning performance can guide the design of interventions, implementations, and programs that optimize learning environments and improve student outcomes. The current study examined the serial mediating role of specific study skills (systematic and organized study, and effective homework completion and exam preparation) on the linkage between academic self-efficacy and school success. The results of serial mediation analysis confirmed the hypothesized relationships among the study variables.

Parallel with the previous studies in the literature, the current study found a positive relationship between students' academic self-efficacy beliefs and their academic achievement (Honicke & Broadbent, 2016; Koca &

Dadandı, 2019; Zysberg & Schwabsky, 2021). The Social Cognitive Theory suggests that self-efficacy belief is one of the basic mechanisms that direct and regulate human behaviours (Bandura, 1990). In this line, a high level of academic self-efficacy belief activates a series of cognitive, affective and behavioral process that can support the learning performance. Students with a high level of self-efficacy beliefs tend towards challenging activities that provide them with the opportunity to improve their scholastic skills, and they are open to learning and more willing to participate in educational activities (Schunk, 2003). As they believe that they have the necessary skills and capabilities, they tend to persist and act with a high level of motivation during the learning process even if they fail. Furthermore, they experience fewer negative feelings that damage learning performance, such as stress and anxiety, compared to their peers with lower academic self-efficacy beliefs (Pajares & Schunk, 2002). It is possible to suggest that when considered together, students' beliefs in their own academic abilities can facilitate their concentration on academic studies and the effective management of the learning process. Consequently, this can lead to a higher level of learning and success. In fact, Bandura (1997) highlights that self-efficacy belief is a power that enables students to turn their academic knowledge and skills into effective performance, and students with similar levels of knowledge and skills can have different levels of learning outcomes depending on their self-efficacy beliefs. In this context, the current study is deemed to be in parallel with the Social Cognitive Theory.

The outcomes derived from the serial mediation analysis stand to enhance our comprehension of the intricate dynamics characterizing the interrelationship between academic self-efficacy and the attainment of academic success. These results showed that both systematic and organized study, and effective homework completion and exam preparation played partial mediating roles in the relationship between academic self-efficacy and academic achievement. This means that a high level of self-efficacy belief can increase students' likelihood to adopt strategies and techniques regarding systematic and organized study, and effective homework completion and exam preparation, which will in turn contribute to their academic achievement. From the perspective of self-regulated learning, the current study findings reinforce the previous studies in the literature that underline the academic self-efficacy beliefs as a critical factor in self-regulated learning process (Usher & Pajares, 2008; Zimmerman et al., 2017). Therefore, the current result can be explained in line with self-regulation skills. Self-regulation process is composed of a feedback circle consisting of anticipating the performance – monitoring the performance – self-evaluation (Cleary & Zimmerman, 2012). Likewise, identifying and using the most suitable strategy and technique among many others involves self-monitoring and self-evaluation, in other words, a self-regulation process. According to the Social Cognitive Theory, self-efficacy beliefs encourage individuals to adopt behaviours of self-regulation and self-adjustment (Bandura, 1989). Students with a strong sense of academic self-efficacy resort to self-regulation strategies such as seeking help and changing their learning strategy in order to improve their learning performance when they feel insufficient (Schunk & Mullen, 2012). Hence, academic self-efficacy beliefs can activate the self-regulation process and help students to evaluate the efficiency of study strategies they use and explore the most suitable one for themselves. In this particular context, individuals harboring robust self-efficacy beliefs are apt to employ study strategies and techniques with a heightened degree of effectiveness and proficiency. It is possible to offer another possible explanation for this result relying on the relationship between self-efficacy and motivation. In fact, students should be motivated to study in order to adopt and use study skills. Those students who do not have

enough motivation might find it boring to study or perceive studying as an obligation (Demirezen & Akhan, 2013). Therefore, even if they know about effective study strategies and techniques, they may not use them. However, academic self-efficacy beliefs can help students to find the motivation they need to spare time for learning activities and make use of study strategies.

According to the second part of the mediation mechanism, systematic study and use of effective study techniques during exam preparation contribute to students' academic achievement. This result supports the previous study findings (Fazal et al., 2012; Jansen & Suhre, 2010). Using strategies such as studying regularly, arranging the studying environment, noting down and summarizing the important pieces of information can improve learning by enabling students to process information more effectively. This can have a positive influence on their learning and exam performance. The results of a meta-analysis study conducted by Purdie and Hattie (1999) show that spending more time on studying does not contribute to success significantly, but having a wide range of study skills (i.e. versatility) is significantly related to both cognitive and affective results. When synthesized in a comprehensive manner, the findings of the present study imply that the cultivation of systematic and efficacious study skills may assume a pivotal and consequential role within the domain of the learning process.

The current study findings also indicate that interventions, implementations and policies that aim to improve students' academic self-efficacy beliefs and study skills can contribute to academic achievement and other student outcomes. Having a robust academic self-efficacy belief can increase students' motivation to learn and encourage them to use more effective study techniques. Bandura (1995) proposes that self-efficacy beliefs have four sources: mastery experiences, vicarious experiences, verbal persuasion and emotional state. In this context, teachers can take the advantage of differentiated instruction that aims to adjust teaching, academic tasks and assignments in line with students' personal skills and needs during in-class activities. Such an approach can support students' self-efficacy beliefs by providing them with mastery experiences in educational settings (Ramli & Nurahimah, 2020). Moreover, teachers can help students to improve their self-efficacy beliefs by making use of vicarious experiences such as peer models as well as verbal persuasion methods such as positive feedback and encouragement. Also, school counsellors can develop psychological interventions in order to strengthen students' self-efficacy beliefs. However, such interventions should not aim to strengthen students' self-efficacy beliefs artificially but to make their self-efficacy compatible with their current skills and capabilities. Self-efficacy beliefs that have been strengthened via secondary methods such as vicarious experiences and persuasion can last for a short period of time unless supported by expert experiences, and finally they can be easily inactivated by experiences of failure (Schunk, 1991).

Although the current study has significant theoretical and practical outputs, it should be noted that it also has some limitations. Firstly, the correlational nature of the study does not allow one to make precise causal inferences among the study variables. Therefore, there is a possibility that the relationships established among academic self-efficacy, study skills and academic achievement can work in reverse directions. Further research with experimental or longitudinal design can more precisely explore the causal relationships among these variables. Secondly, the current study sample is composed of only secondary school students. Testing the current model with sample groups including more demographic variety such as primary school, high school and university students can increase the

generalizability of the findings. Thirdly, the current method of measurement relies on self-report, which makes the results vulnerable to measurement errors resulting from participants such as social desirability bias. Future studies can take the advantage of additional measurement tools such as teacher and parent evaluations in order to minimize this kind of error. Finally, the current study focuses only on learners' features to explain academic achievement. A deeper understanding of the issue can be possible via enriching the model by adding contextual factors such as socioeconomic level, teacher support, school resources and peer support.

Conclusion

In conclusion, the current study contributes to the literature by putting forth that systematic and organized study, and effective homework completion and exam preparation have a serial mediation effect on the relationship between academic self-efficacy and academic achievement. The acquisition of disciplined study habits and the assimilation of efficacious learning strategies are as crucial as innate talent in achieving high educational success. Strong academic self-efficacy can further enhance learning outcomes by motivating students to employ effective study strategies.

Ethic

This study was approved by Yozgat Bozok University Social and Human Sciences Ethics Committee (Date: 18/05/2022, Approval Number: 33/17).

Conflict of Interest

The authors declare that they have no conflict of interest.

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