

Mediating Role of Academic Grit and Subjective Vitality in the Relationship between School Belongingness and School Satisfaction among Middle School Students Who Migrated After an Earthquake

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Abstract

On February 6, 2023, two catastrophic earthquakes hit Turkey on the same day, which was called the biggest disaster of the last century. Following this disaster, some students living in 10 provinces affected by the earthquakes decided to leave their hometowns and continue their education in different cities. In recent years, the concepts of school belonging and school satisfaction have gained prominence in the relevant literature. However, little is known about the mechanisms that mediate the relationship between school satisfaction and school belonging. Therefore, the purpose of this study was to examine the mediating effects of academic grit and subjective vitality on the relationship between students' school belonging and school satisfaction. The study participants consisted of middle school students who moved to another city after the earthquakes and started attending different schools in those cities. A total of 550 students participated in the study, consisting of 312 girls and 238 boys. The age of the participating students ranged from 10 to 15 years ($M=12.43$, $SD=1.07$). In the current study, the data collection instruments included a personal information form developed by the researcher, the School Belongingness Scale, the Comprehensive School Satisfaction Scale for Children, the Academic Grit Scale, and the Subjective Vitality Scale. The results of the study indicate that academic grit and subjective vitality play a significant mediating role in the relationship between school belonging and school satisfaction. In addition, all path coefficients in the current study are significantly positive. Based on the results of the study, some suggestions are offered to increase school satisfaction among middle school students.

Keywords: School satisfaction, school belongingness, subjective well-being, academic grit, earthquake

On February 6, 2023, two major earthquakes occurred in Turkey. They occurred on the same day at two different times, affecting a total of 10 provinces and causing significant loss of life and property. In the aftermath of the earthquakes, major challenges and changes became inevitable for the people living in the earthquake-affected region. One of the most significant changes was that people had to leave the earthquake zone and continue to live in different cities. As a result, more than one million students and their families moved to different cities throughout the country, making the idea of being part of a new and different school even more important. Therefore, it seems imperative to assess the academic, social, and career progress of these students who were relocated after the earthquakes. Findings from school-based research also indicate a decline in school satisfaction among middle school students, especially in recent years (Griffiths et al., 2009; Li et al., 2023; Park & Huebner, 2005; Tomislava et al., 2023). This trend was exacerbated after the COVID-19 pandemic (Khan et al., 2022). Furthermore, according to an OECD report (2019), one in three students worldwide does not feel a sense of belonging at school and is not satisfied with school. The report also highlights that this phenomenon is becoming more widespread every day. Since there is no doubt that the decline in students' sense of belonging and satisfaction with school is significant, it seems crucial to conduct a study to investigate the cause of this decline. Furthermore, studies conducted on students who have moved to a new location and changed schools show that these students experience lower levels of school satisfaction

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and struggle to engage in both classroom and extracurricular activities (Rodriguez et al., 2020; Santos et al., 2016). Given the severity of this problem, it is even more important for students who have moved to different cities after an earthquake to develop a sense of belonging and satisfaction with school. Therefore, this study aims to explore the direct and indirect relationships between school satisfaction, school belonging, subjective well-being, and academic grit among students who moved to different cities after the February 6 earthquake in Türkiye.

School Satisfaction

Schools play a crucial role in supporting the development of students (Steinberg, 2013). Moreover, schools are institutions where students acquire various skills and enhance their competencies (Ruus et al., 2007), and they are considered to be important developmental contexts where students are provided with opportunities for potential growth (Hamilton & Hamilton, 2006). Within the school context, the concept of school satisfaction, which reflects students' satisfaction and contentment with their school life, has received attention in the relevant literature (Li et al., 2023; Varela et al., 2018).

The concept of school satisfaction has found its place in educational research, especially in school-related studies, alongside the development of positive psychology and positive youth development (Jiang et al., 2022). The integration of positive education into school studies stems from an understanding of enhancing the well-being of students. In this sense, the core principle of positive education is to increase student vitality (Kern et al., 2015). The most significant impact of school satisfaction is believed to be its contribution to students experiencing positive emotions about their school life, supporting their participation in constructive activities, and increasing their socio-cognitive learning levels (Moral-Garcia et al., 2021). Research on school satisfaction indicates its inhibitory role in preventing students from engaging in problematic and risky behaviors (Freeman et al., 2011).

Furthermore, increases in students' satisfaction with school have been associated with increases in their life satisfaction in various life roles (Cheraghikhaher et al., 2015; Wilkins et al., 2014). To illustrate, school satisfaction is positively related to school adjustment skills (Baker & Maupin, 2009) and academic achievement, while it is negatively related to behavioral and adjustment problems (Baker & Maupin, 2009; Elmore & Huebner, 2010; Jiang et al., 2019; Skrzypiec et al., 2018). A study conducted on immigrant students (Gurthrie et al., 2019) found that immigrant students achieved lower levels of school satisfaction compared to other students and also experienced high levels of peer bullying with lower levels of well-being. In general, research on school satisfaction indicates that it positively contributes to students' life satisfaction as well as their academic success.

Sense of School Belonging

Several individual and environmental factors contribute to students' satisfaction with school (Hui & Sung, 2010). While all of these factors are important, researchers and practitioners may consider individual factors to be more important. School satisfaction involves cognitive evaluations of students' experiences at school (Huebner & McCullough, 2000), and emotions are the most important indicators of these cognitive evaluations translated into behavior. Therefore, an important component of school satisfaction can be expressed as students' sense of school belonging. School belonging refers to the extent to which a student feels supported, included, respected, and accepted by others in the school environment (Goodenow & Grady, 1993). Furthermore, a sense of belonging is one of the basic psychological needs that every person has (Arslan, 2022a). Maslow also emphasized the concept of belonging in his hierarchy of needs, which he developed as part of his own approach (Slater et al., 2016). Starting with Maslow's general sense of belonging, this concept was later applied to the school environment by various researchers (Goodenow & Grady, 1993; Osterman, 2000; Willms, 2000).

Studies on students' sense of belonging at school have shown a positive relationship with life satisfaction (Arslan et al., 2020; Avcı, 2023), subjective well-being (Tian et al., 2016), psychological well-being (Arslan & Allen, 2016; Arslan & Coşkun, 2023), and a negative relationship with internalized and externalized problem behavior and substance abuse (Arslan, 2022b; Arslan et al., 2020) and peer bullying at school (Xu & Fang, 2021). On the other hand, a study by Parr et al. (2020) found that school belonging was positively related to belonging in general and negatively related to depression. Also, a study conducted on immigrant students (Ordaz & Mosqueda, 2021) concluded that immigrant students had a low sense of school belonging. Overall, the relevant literature suggests that students' sense of belonging to school is an important component of their vitality in the school environment.

Mediating Role of Academic Grit and Subjective Vitality

Emotions are determinants of behavior as indicators of cognitive structure. However, in some cases, behavior can also influence an individual's perception (Beck, 1976). In this regard, students' sense of school belonging, as a cognitive evaluation of their school experience, may be influenced by certain behavioral outcomes. A research study that examined the impact of individual and environmental factors on students' school satisfaction found that the most significant predictor of school satisfaction was academic performance with teacher support (Hui & Sung, 2010). Among the individual factors, the level of academic achievement and its determinants are crucial in this context. One of the most important indicators of academic performance is the level of determination, which influences students' behavioral efforts (Clark & Malecki, 2019).

In a school setting, academic grit, which is associated with students' school satisfaction and reflects their effort in the educational environment rather than academic performance, is an important variable. Although the concept of grit has been used in a variety of fields, it has been increasingly addressed in school research in recent years (Prince, 2015). Research indicates a positive relationship between high levels of academic grit and variables such as school satisfaction (Peker & Cengiz, 2023), academic achievement (Neroni et al., 2022), and school attachment (Chung et al., 2020). In addition, studies show that academic grit differs from intellectual potential in its relationship with academic achievement (Duckworth & Quinn, 2009). Therefore, focusing on a student's level of academic grit in the school environment may be essential to increasing effort in challenging situations (Clark & Malecki, 2019). Increasing students' determination and effort in the educational environment has an impact on their academic success and the satisfaction they derive from school (Osborne & Jones, 2011). On the other hand, research on academic grit has demonstrated its significant relationship with overall life satisfaction (Spoeskes, 2018) and psychological vitality (Vainio & Daunkantaite, 2016), highlighting the importance of students' effort and determination to their well-being. A study examining the level of academic perseverance among immigrant students concluded that immigrant students had lower levels of academic perseverance compared to other students (Tovar-Garica, 2017).

Subjective vitality, described as part of positive emotional functioning, is defined as a state of being alive and energetic (Ryan & Frederick, 1997). As this definition implies, when an individual has a higher level of subjective well-being, he or she has the psychological structure necessary to perform all tasks and activities very well, making him or her adequate and suitable for various activities (Ryan & Deci, 2001). In addition, subjective vitality contributes to an individual's psychological health by representing a dynamic structure (Nix et al., 1999). Therefore, subjective vitality can be viewed as a structure that contributes to an individual's overall vitality by being a state of being alive and energetic. Subjective vitality is highly relevant to students because they spend a significant portion of their day at school. Therefore, the school environment is a place where students have the opportunity to learn but also engage in physical activity. As students complete their school-related tasks, they expend physical energy, which has a significant impact on their motivation (Owen, 2016). Research on this topic has shown that physical activity and energetic state are related to school and academic performance (Álvarez-Bueno et al., 2017a; Fini et al., 2010; Mavilidi et al., 2018). This link is considered important for students' positive school experiences. For example, a study by Satici and Deniz (2019) found that adolescents' level of subjective vitality was a significant predictor of school satisfaction. Therefore, students' state of physical vitality affects their academic, social, and emotional learning performance as well as their school satisfaction.

Recent research in school environments has unveiled a disconcerting trend, indicating a discernible decline in students' connection and contentment with their educational experience, especially in recent years. A thorough examination of the existing literature underscores the multifaceted nature of factors influencing students' perceptions of school satisfaction. However, it is worth noting that the number of studies delving into these influential elements remains limited. Moreover, there is a conspicuous dearth of research dedicated to understanding these dynamics within the context of immigrant students. Thus, this study sets out to bridge these gaps by scrutinizing a comprehensive model that encompasses both direct and indirect variables that impact students' satisfaction with their educational journey. The present study aimed to examine the mediating role of academic grit and subjective vitality in the relationship between school belongingness and school satisfaction among middle school students who migrated after an earthquake.

Method

This research aims to investigate the mediating effects of subjective vitality and academic grit on the relationship between adolescents' sense of school belonging and school satisfaction. In this line, the research employed a relational research design, which is a quantitative research method. A relational research design is used to test the relationship between two or more variables in a study (Fraenkel et al., 2012). The research was conducted in accordance with the Declaration of Helsinki. In addition, the necessary ethical permission was obtained from the Yozgat Bozok University Ethics Committee with the approval decision number 04-49 and dated June 20, 2023.

Participants

The research group consisted of 550 students enrolled in different middle schools under the Directorate of National Education in Yozgat, Ankara and Çorum City Center. The age of the participants varied between 10 and 15 years ($M=12.43$; $SD=1.07$). Among the participants, 312 were female and 238 were male.

Data Collection Tools

Comprehensive School Satisfaction Scale for Children. The Comprehensive School Satisfaction Scale for Children was developed by Randolph et al. (2009) to measure children's and adolescents' satisfaction with their school life, and it was adapted to the Turkish culture by Telef (2014). The scale includes a total of six items with a 5-point Likert scale. Therefore, scores on the scale can range from 6 to 30. Higher scores on the scale indicate a higher level of satisfaction with the school. The analysis conducted during the adaptation of the scale to the Turkish culture confirmed the original single-factor structure, and the explained variance was calculated to be 65%. The Cronbach's alpha internal consistency coefficient of the scale was found to be .89. In this study, the Cronbach's alpha internal consistency coefficient of the scale was found to be .92.

Subjective Vitality Scale. The Subjective Vitality Scale, which was developed by Ryan and Frederick (1997) to measure individuals' sense of feeling energetic, alive, and vital, was adapted to the Turkish culture by Akın et al. (2012). The scale contains a total of 7 items with a 7-point Likert scale. Therefore, scores obtained from the scale can range from 7 to 49. Higher scores on the scale indicate higher levels of subjective vitality. The Cronbach's alpha internal consistency coefficient of the scale was calculated to be .85. In this study, the Cronbach's alpha internal consistency coefficient of the scale was found to be .86..

Academic Grit Scale. The Academic Grit Scale was developed by Clark and Malecki (2019) to measure students' effort and determination to succeed in their academic careers and school environments. It was adapted to the Turkish culture by Özdoğan (2021). The scale has a 5-point Likert-type scoring and includes a total of 10 items. Therefore, scores obtained from the scale can range from 10 to 50. The Academic Grit Scale has a single-factor structure, and higher scores on the scale indicate higher levels of academic grit. The Cronbach's alpha internal consistency coefficient of the scale was calculated to be .89 for middle school students, .92 for high school students, and .92 for the total sample consisting of both groups in this study.

School Belongingness Scale. The School Belongingness Scale was developed by Arslan and Duru (2017) to measure school belonging among middle and high school students. The scale has a 4-point Likert-type scoring and includes a total of 10 items. The scale includes two subscales: acceptance and exclusion. Scores that can be obtained from the scale range from 10 to 40. Scores from the scale, combined with the corresponding score for each subscale, provide a total score. In calculating the total score, the scores for the Exclusion subscale, which is negative, are reverse-coded and then combined with the total score for the Acceptance subscale. The Cronbach's alpha internal consistency coefficient of the scale was calculated to be .85. In this study, the Cronbach's alpha internal consistency coefficient of the scale was found to be .83..

Procedure

The study data were collected from students attending different middle schools under the Yozgat Provincial Directorate of National Education during the 2022-2023 academic year. Before administering the data collection instruments to the participating students, they were informed about the study, which was conducted on a voluntary basis. For this purpose, the researcher initially obtained a total of 574 observations. Before beginning the analysis of the study data, the researcher conducted a preliminary analysis to test whether the data obtained met the requirements. The first step was to perform an outlier analysis. According to Tabachnick and Fidell (2007), in one-tailed outlier analysis, data that fall outside the range of z -score ± 3.29 ($p < .001$) can be considered outliers.

Accordingly, 20 observations in the data set were excluded from the analysis. Following the one-tailed outlier test, a multivariate outlier test was performed. The Mahalanobis distance value was used for the multivariate outlier test and four more observations were excluded accordingly. After one-sided and multivariate outlier examination, the researcher examined multicollinearity by calculating VIF (Variance Inflation Factors), CI (Condition Index) and tolerance values. According to Hair et al. (1998), VIF values should be less than 10, tolerance values should be .10 or higher, and CI values should be less than 30. The analysis showed that all related values were within the reference values (CI: 7.54-11.11; VIF: 1.37-1.60; Tolerance: .63-.73). Finally, the data set obtained in the research was examined in terms of normal distribution according to the coefficients of skewness and kurtosis. In this context, all variables included in the analysis are expected to be within the range of +1 and -1 (Tabachnick and Fidell, 2007). According to the corresponding results, the skewness and kurtosis coefficients for all the study variables fall within the reference values (Table 1).

Data Analysis

First, the initial descriptive values of the study variables were calculated, and then the Pearson's product-moment correlation coefficient was used to examine the relationships between the variables. Next, the researcher tested the relationship between middle school students' school satisfaction and sense of school belonging in terms of academic grit and subjective vitality. IBM SPSS Statistics 26 and Mplus 7.3 were used for these analyses.

Results

The Pearson Product-Moment Correlation Coefficient was used to test the relationships between the variables in the study. Table 1 below shows the resulting scores and descriptive statistics.

Table 1. Descriptive statistics and correlations

	Correlations				Descriptive Statistics		
	1	2	3	4	Mean (SD)	Skewness	Kurtosis
School Sat.	-	.61 **	.52 **	.56 **	17.57(3.09)	.25	.49
School Bel.		-	.50 **	.51 **	23.67(6.38)	.21	-.78
Acad. Grit			-	.36 **	30.39(10.96)	.02	-.88
Sub. Vit.				-	32.59(8.72)	-.94	.08

Note. ** $p < .001$. School Sat.: School Satisfaction; School Bel.: School Belonging; Acad.Grit: Academic Grit; Sub. Vit.: Subjective Vitality

As shown in Table 1, there was a significant positive relationship between school satisfaction and school belonging ($r = .61$, $p < .001$), academic grit ($r = .52$, $p < .001$), and subjective vitality ($r = .56$, $p < .001$). In addition, school belonging was significantly related to both academic grit ($r = .50$, $p < .01$) and subjective vitality ($r = .51$, $p < .001$). Finally, there was a significant relationship between academic grit and subjective vitality ($r = .36$, $p < .001$).

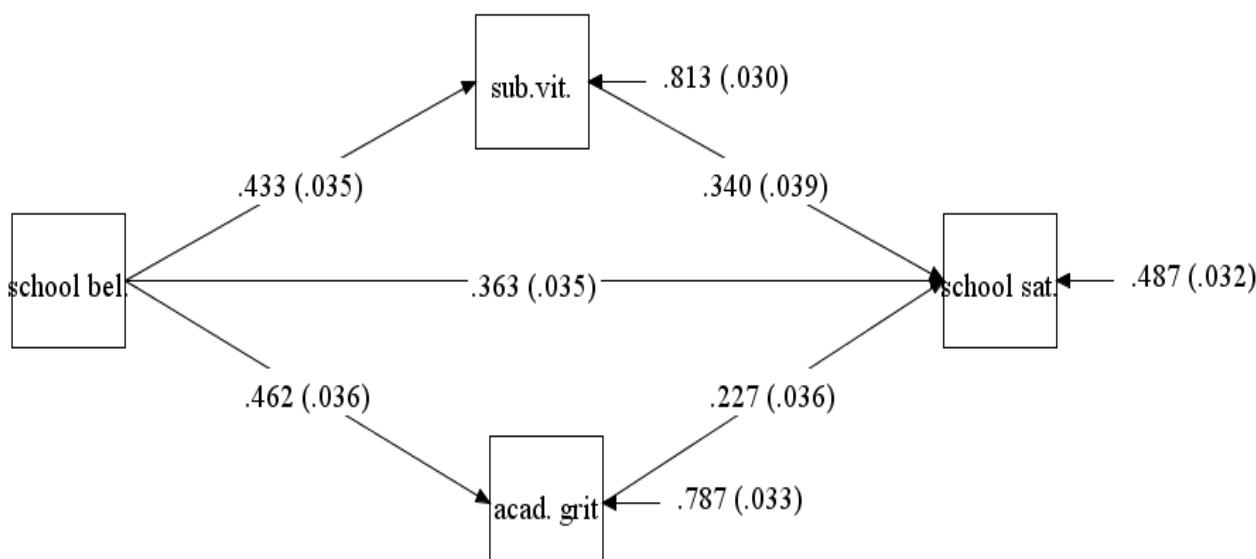


Figure 1. Path diagram of the model

Findings of Path Analysis for Testing the Hypothetical Model

The relationship between middle school students' school satisfaction and school belonging was tested using academic grit and subjective vitality as mediators. Figure 1 below shows the related results. All variables in the model were defined as observed variables, and path analysis was conducted accordingly. The results of the analysis indicated that the modal fit was good ($\chi^2(6) = 11.605, p < .05$; CFI = .98; TLI = .91; RMSEA = .02 SRMR = .04). According to the parameter results obtained from the model, sense of belonging to school ($\beta = .36$), subjective vitality ($\beta = .34$), and academic grit ($\beta = .23$) positively predicted school satisfaction. On the other hand, sense of belonging to school significantly and positively predicted subjective vitality ($\beta = .43$) and academic grit ($\beta = .46$). Sense of belonging to school, academic grit, and subjective vitality also explained 49% of the variance in school satisfaction. In addition, sense of belonging to school explained 26% of the variance in subjective well-being, while academic grit explained 25% of the variance in this variable.

Table 2. Bootstrap results for the mediation model

Mediating	Bootstrapping		Bias %95GA	
	Estimate	SE	Lower Limit	Upper Limit
School Bel. → Sub. Vit → School Sat.	.31	.03	.22	.37
School Bel. → Acad. Grit → School Sat.	.24	.04	.15	.29

Discussion

The purpose of this study is to examine the mediating effect of academic grit and subjective vitality on the relationship between school belonging and school satisfaction among middle school students who moved to a new city after an earthquake. The results of the study show that school belonging predicts school satisfaction both directly and indirectly through academic grit and subjective vitality. The explained variance for this model is 15%. On the other hand, school belonging also significantly predicts school satisfaction through subjective vitality ($\beta = .24$), with an explained variance of 12%. In conclusion, the current study identifies both direct and indirect significant pathways between the variables.

First, the study examined direct pathways among the variables. In this regard, consistent with the findings of the previous study, this study shows that school belonging, subjective vitality, and academic grit significantly predict school satisfaction. School belonging, school satisfaction, and the fulfillment of basic psychological needs in school are important psychological characteristics for students (Altunkum et al., 2023). These concepts are also interrelated. Among these concepts, belongingness is the subjective feeling that a person is an integral part of the systems around him or her, including family, friends, school, work environments, communities, cultural groups, and physical spaces (Hagerty et al., 1992). However, this feeling is not separate from an individual's cognitive structure. Therefore, school belonging focuses on both cognitive and affective components of students (Jimerson et al., 2003). Considering the amount of time students spend at school and the relationships they form there, students' sense of belonging can be considered important for their psychological, social, and emotional development. The results of the current study support previous findings that students' sense of school belonging significantly affects their school satisfaction (Boker, 2023; Griffith, 1997; McMahon et al., 2008). Furthermore, studies on immigrant students indicate that school belonging is a significant predictor of school satisfaction (Fung Lam et al., 2015; Sağın et al., 2022; Stebleton et al., 2015).

Another finding directly from the model in this study is that academic grit significantly predicts school satisfaction. Studies on immigrant students (Banse and Palacios, 2018; O'Neal et al., 2016) as well as students without immigrant experience (Lan and Moscardino, 2019; Okur et al., 2023; Peker and Cengiz, 2023) have found similar results on this issue. Focusing on the level of students' academic grit in the school environment is considered important in order to increase their efforts in challenging processes and prepare them for this process (Clark and Malecki, 2019). Furthermore, given that the education system in Turkey relies on exam assessments, the level of grit displayed by students is expected to influence their satisfaction with school. Another result obtained from the direct paths in the model in the current study is that subjective vitality significantly predicts school satisfaction. Previous studies in Turkey have obtained similar results regarding this issue (Satıcı and Deniz, 2019). This study shows that the level of students' subjective vitality is a significant predictor of their school satisfaction. The findings

of this study are parallel to the findings of previous studies in the literature (Akin and Akin, 2015; Mavilidi et al., 2021).

Overall, the results of the current study suggest that emotional and behavioral variables are effective in improving students' school satisfaction. In addition to predicting school satisfaction, another finding of the study is that school belonging also has a predictive effect on subjective vitality and academic grit. Considering the results, it seems possible to state that feelings have a guiding effect on behavior. Therefore, it is expected that students' positive feelings of school belonging will have a positive effect on their cognitive vitality and grit, which reflect their effort in the school process. Furthermore, the results of similar studies in the related literature are consistent with the results of the current study. For example, a meta-analysis study conducted by Korpershoek et al. (2020) shows positive and significant relationships between the variables of school belonging and academic achievement, reflecting academic grit. Similarly, other studies on this topic have also yielded similar results (Schmahl, 2022; Zhang et al., 2018). Therefore, the findings of the current study can be considered as expected.

Another significant finding of the current study is that school belonging predicts school satisfaction through academic grit and subjective vitality. In the literature review conducted by the researcher, a directly similar study on this topic could not be found. However, the relevant result can be explained based on cognitive-behavioral theory. According to the theoretical framework, thoughts and emotions are two major determinants of an individual's behavior. However, in some cases, behaviors can determine thoughts and, consequently, behaviors (Beck, 1964). Therefore, it can be said that students' sense of school belonging has a predictive effect on their subjective vitality and academic grit. In this regard, a study examining the levels of school attachment of immigrant and non-immigrant students shows that immigrant students have higher levels of school attachment compared to non-immigrant students (Chiu et al., 2012). Another study involving students from different cultures (Vaguera, 2009) shows that students with high levels of school attachment also have high levels of educational attachment to school. On the other hand, Ordaz and Mosqueda (2021) found that school belonging is a significant predictor of academic success. Therefore, it is an expected result that the mediation model developed and tested in the current study has been statistically confirmed.

Conclusion and Recommendations

The purpose of this study is to examine the mediating effect of academic grit and subjective vitality on the relationship between school belonging and school satisfaction among middle school students who transferred schools after an earthquake. According to the results, school belonging significantly predicts school satisfaction through academic grit and subjective vitality. Considering the results of the current study, it is possible to suggest that school belonging is generally an important variable for academic performance and school satisfaction. Therefore, future research can be conducted to examine the variables associated with the sense of belonging. From this point of view, intervention programs can be designed for students to help them develop a sense of belonging, which will result in school success and satisfaction. The current study also examined the school satisfaction of students who moved to other cities and started a new school after the earthquake. Further studies can be conducted with a sample group of students without migration experience to validate the results of the current study. Another finding of the study is the contribution of students' academic grit to school satisfaction. In this direction, a process-oriented evaluation that reflects effort and determination, rather than a result-oriented evaluation in educational environments, may contribute to students' academic performance in general and their satisfaction with school..

Compliance with Ethical Standards

Ethical Standards

All study procedures involving human participants followed institutional and/or national research committee ethical standards and the 1964 Helsinki declaration and its later amendments or comparable ethical standards. In addition, the necessary ethical permission was received from Yozgat Bozok University Ethics Committee with the approval decision numbered 04-49 and dated June 20, 2023.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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