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## A Structural Equation Modeling of Academic Locus of Control, Procrastination, and Their Impact on School Satisfaction: Insights From the Azerbaijani Educational System

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**Abstract:** Examining the academic locus of control, procrastination, and school satisfaction is crucial for understanding student well-being and educational outcomes. The purpose of this study was to explore the potential mediating role of academic procrastination in the association between academic locus of control and school satisfaction in a sample of adolescents ( $N = 628$ ;  $\bar{X} = 13.30$ ,  $SD = 1.74$ ) residing in various regions of Azerbaijan. The results revealed that higher levels of internal locus of control were positively related to school satisfaction, while increased levels of external locus of control were negatively associated with school satisfaction. The analysis using structural equation modeling showed that school satisfaction was partially influenced by academic procrastination, which acted as a mediator in the relationship between internal locus of control and school satisfaction. Additionally, academic procrastination fully mediated the relationship between external locus of control and school satisfaction. These findings were further discussed in the context of existing literature, and recommendations were provided for future research in this area.

**Keywords:** *Academic locus of control, academic procrastination, school satisfaction, structural equation modeling.*

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### Introduction

Adolescence, which covers an important part of a person's life, is a critical period of growth and development that is characterized by significant physical, cognitive, social and emotional changes (Arnett, 2014). It is considered a period of transition of people from childhood to adulthood, and is marked by a sense of self-awareness, the discovery of identity and an increase in independence (Erikson, 1968). At this stage, adolescents struggle with various challenges and problems as they go through the complex structure of adolescence. One important aspect of adolescents' lives is their involvement in school (Demir, 2023). School life includes not only academic development, but also social interactions, out-of-school activities and the general school environment that adolescents are exposed to on a daily basis (Aliyev, 2019). School life also offers a rich social environment in which adolescents interact with peers and develop social skills such as cooperation, communication, empathy and conflict resolution to shape their social development (Wentzel, 2022). Interactions that occur at school contribute to the formation of friendships, the development of social networks, and the formation of social identities (Brown & Larson, 2009). Besides that, the school environment itself plays an important role in the emotional development of adolescents. A supportive and inclusive school climate can promote positive emotional well-being and mental health (Kutuk, 2023; Meehan et al., 2017). Finally, school life is a multifaceted experience that significantly affects the cognitive, social, emotional, and behavioral development of adolescents. It provides a structured environment for academic learning, promotes social interactions and extracurricular activities, and contributes to the overall well-being of adolescents.

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School satisfaction plays an important role in shaping students' academic success, emotional well-being, and overall educational experience. It covers a number of factors that influence students' perceptions, including the quality of education, school environment, social interactions, out-of-school activities, and parental involvement. To fully understand school satisfaction, it is very important to examine the factors that contribute to students' satisfaction with the school environment. Rustamov, Aliyeva et al. (2023) found that psychological factor is a significant factor in influencing the school satisfaction of Azerbaijani students. It should also be noted that the quality of education and the competence of teachers have long been recognized as important elements. Effective teaching practices such as clear communication, teaching clarity, and student-oriented pedagogy have been linked to increased students' satisfaction and engagement (Fauth et al., 2014). Another important aspect of school satisfaction is school climate, which includes interpersonal relationships among students, teachers, and administrators, as well as the general school culture. Positive and inclusive climates that promote respect, fairness, and a sense of belonging have been consistently associated with higher levels of student satisfaction (Thapa et al., 2013). This way, positive educational experiences that allow students to develop academically, emotionally, and socially are promoted. By understanding the determinants of school satisfaction and their subsequent impact on students, teachers and educators can identify areas for improvement and implement effective strategies to develop optimal learning environments.

As locus of control is a concept that determines how an individual reacts to different situations, including academic conditions, many researchers wanted to study locus of control and how the events in a person's life are interpreted and the belief that they have control over these events (Lefcourt, 1966). Because locus of control is related to academic success (e.g., learning, high grades), it has become imperative for researchers to examine the beliefs of high-performing, academically successful students.

While proposing the theory of social learning, Rotter (1954) first noted the concept of locus of control and described it as a concept that shows how a person believes in control over the events that occur in everyday life and expresses the belief that what causes the good and bad events that a person encounters in life. Rotter's approach was based on the belief that behavior is driven by reinforcement and what causes an individual's behavior through rewards and punishments. These beliefs guide how people adopt attitudes and behaviors. Referring not only to social learning theory but also to Weiner's attribution theory, locus of control refers to one's perception of the root causes of success or failure in one's life (Hasan & Khalid, 2014). What this perception and beliefs are based on points to two types of locus of control: internal and external locus of control.

This internal locus of control is based on when people believe that their success or failure is due to factors within their control. If they believe that their success or failure is largely due to something outside of their control (e.g., success or failure was due to bad luck or the difficulty of the task), this indicates that they have an external locus of control. In other words, locus of control is a belief that the consequences of our behavior are due to our actions (internal locus of control) or to external factors beyond our control (external locus of control) (Burger, 2007).

Since locus of control is a concept related to academic success, it has been suggested in the scientific literature that there is an interaction between it and procrastination. Procrastination is defined as the conscious delaying of a person's responsibility (Steel, 2007). Procrastination occurs not only in the "work" context, but also in school or academic activities. Delays in the execution of "tasks" in academic activities in universities also often occur; there are also students who often put off tasks until the last minute (Sari & Fakhriddiana, 2019). In more precise terms, procrastination behavior can be described as the act of delaying an important task that an individual has planned to complete, even when there is no logical reason for the postponement.

Research has demonstrated a significant relationship between one's locus of control and academic procrastination. Sari and Fakhriddiana (2019) found that a lower level of internal locus of control is associated with a higher propensity for academic procrastination. Zarzycka et al. (2021) supported this notion within their model, indicating that internal locus of control negatively predicts procrastination behavior. Furthermore, Prihadi et al. (2018) suggested that an internal locus of control plays a direct and effective role in reducing academic procrastination. According to the explanation provided by Jose and Vijayan (2021), students who possess an external locus of control are more prone to procrastination compared to students with an internal locus of control. Because students with internal locus of control know that the path to success is through their hard work, they quickly solve their tasks and finish their work. They make more efforts to achieve their goals because they know that their academic success is related to them (Burger, 2007; Deniz et al., 2009). People with very high levels of internal control perceive the world as a place that can be controlled and believe that they have a superior role. These students are mostly hardworking, persistent and trying to solve the problem situation, trying to think logically whenever it is possible (Deniz et al., 2009; Yazdanpanah et al., 2010). Based on the above, we can put forward this hypothesis (*H*):

*Hypothesis 1: A high internal locus of control predicts less procrastination.*

In a study conducted by Daum and Wiebe to investigate the cause of college freshman failure, they found that the cause was related to a high level of external locus of control (Daum & Wiebe, 2003). Akbay and Delibalta (2020) observed that an external locus of control positively predicts academic perfectionism, indicating that individuals who perceive less control over their outcomes are more likely to exhibit tendencies toward perfectionism. This finding is consistent with

the results of Certel and Kozak (2017), who also reported a significant positive association between an external locus of control and academic perfectionism. Research shows that people are more likely to have an external locus of control when they experience failure (Carden et al., 2004). For this reason, people with an external locus of control often procrastinate doing tasks and studying because they believe that their success in the exam or in their studies is related to luck or whether their friends will help them (Saddler & Buley, 1999; Shi et al., 2019).

Drawing from the association between procrastination and locus of control, we can propose the following hypothesis:

*Hypothesis 2: High external locus of control predicts high procrastination.*

Students who possess an internal locus of control are less prone to procrastination compared to those with an external locus of control. Carton (1996) stated that students with an internal locus of control were less likely to procrastinate and completed their assignments more quickly than students with an external locus of control complete. Despite this, very few studies have been found in the literature regarding the relationship between academic procrastination behavior and academic locus of control (Certel & Kozak, 2017). Looking at the other relationship, it is possible that there may be an inverse relationship between school satisfaction and procrastination behavior. School satisfaction includes a student's subjective evaluation of school performance, including their schooling and academic experiences, as well as their relationships with friends and teachers at school (Chen et al., 2016). Academic procrastination also harms school performance by being associated with lower academic achievement and skipping school behavior, which is a factor that will negatively affect school satisfaction. A confirmed model by Çıkrıkçı and Erzen (2020) has substantiated that academic procrastination diminishes satisfaction. This aligns with the findings of Balkis and Duru (2017), who identified a negative relationship between students' academic perfectionism and their satisfaction with academic life. Rustamov, Zalova Nuriyeva, Allahverdiyeva et al. (2023) have established that procrastination has a detrimental effect on students' well-being. The purpose of this research is to investigate the relationship between procrastination behavior and internal locus of control of school students in Azerbaijan and school satisfaction. In this regard, we can put forward the following hypothesis:

*Hypothesis 3: Procrastination behavior mediates the relationship between school satisfaction and internal locus of control.*

### *The Importance of the Study*

The present study aims to contribute to the understanding of student well-being and educational outcomes by examining the interplay between academic locus of control, academic procrastination, and school satisfaction among adolescents in Azerbaijan. The importance of exploring these constructs lies in their significant implications for students' academic performance, motivation, and overall school experience. Given the importance of academic locus of control, procrastination, and school satisfaction for student well-being and educational outcomes, this study seeks to explore the potential mediating role of academic procrastination in the association between locus of control and school satisfaction. By investigating these relationships in the context of the Azerbaijani educational system, this research can provide valuable insights into the unique cultural and contextual factors that may influence these psychological constructs. The findings of this study have the potential to inform educational policymakers, school administrators, and educators about effective strategies to enhance students' academic locus of control, mitigate academic procrastination, and improve overall school satisfaction. Furthermore, by building upon the existing literature, the present study contributes to the growing body of knowledge in this area and sets the stage for future research in different cultural and educational settings.

## **Methodology**

### *Research Design*

The study's research design employed a quantitative approach with the aim of investigating the correlation between academic locus of control, academic procrastination, and school satisfaction among a sample of Azerbaijani students. To examine this relationship, the researchers utilized a structural equation modeling technique, specifically considering the mediation model.

### *Sample and Data Collection*

Convenience sampling was employed to select participants from various schools in Baku for this study. The researchers reached out to school principals and requested them to distribute the prepared forms within their respective schools. Additionally, students were approached by teachers. No incentives were provided to the students for data collection. The study did not employ a purposive sampling method; instead, data were obtained using the convenient sampling approach. The sample size comprised 628 students, with 379 (60.4%) females and 249 (39.6%) males. The ages of the participants ranged between 10 and 17. The mean age was 13.30, and the standard deviation was 1.74. Among the participants, approximately half reported being very satisfied with their relationships with peers (55.6%). A similar distribution was observed regarding their satisfaction with relationships with teachers, where 55.1% were very satisfied,

30.1% were satisfied, 10.8% were neutral, and 4.0% were not satisfied. Data collection was conducted exclusively online from voluntary adolescents.

The Academic Locus of Control Scale was developed by Akin (2007) to assess students' two types of (internal and external) locus of control. The scale consists of 17 items (e.g., I think that in order to get a high grade in the exam, I have to study well for that course), which are rated on a 5-point Likert scale (from 1=totally contrary to 5=totally appropriate). The results of the confirmatory factor analysis have substantiated a two-dimensional structure (RMSEA = .075, NFI = .97, CFI = .98, IFI = .98, RFI = .97, GFI = .92, AGFI = .88, and SRMR = .021). Internal consistency has been found at .94 for the internal locus of control and .95 for the external locus of control. Factor loadings of this scale range between .61 and .95. In this study, the reliability coefficients for the internal locus of control (Cronbach's alpha = .73) and external locus of control (Cronbach's alpha = .74) were found to be sufficient.

The High School Satisfaction Scale (H-Sat Scale), developed by Lodi et al. (2019), was designed to assess school satisfaction among students. The scale was adapted into Azerbaijani by Rustamov, Zalova Nuriyeva, Rustmova et al. (2023). The scale comprises 20 items, where respondents rate statements on a five-point Likert scale, ranging from 1 (not at all) to 5 (completely). The H-Sat Scale encompasses five dimensions of school satisfaction, which are appropriateness of choice (CH), quality of school services (SE), effectiveness of study habits (ST), relationships with classmates (RE), and usefulness for a future career (CA). The results of the confirmatory factor analysis have substantiated a one-dimensional structure ( $\chi^2 = 790.589$ ,  $df = 160$ ,  $p < .001$ ; RMSEA = .071; CFI = .934). Internal consistency of High School Satisfaction Scale ranges between .85-.91. In this study, it has been determined that the reliability coefficient of the scale is acceptable (Cronbach's alpha = .95).

The Tuckman Procrastination Scale was created by Tuckman in 1991 as a measurement tool to assess individual procrastination tendencies. The scale consists of 16 items, with statements such as "I put the necessary time into even boring tasks, like studying," and respondents rate these items using a 4-point Likert scale, ranging from 1 ("Strongly disagree") to 4 ("Strongly agree"). Reliability coefficient for the Tuckman Procrastination Scale was  $\alpha = .89$ . The results of the confirmatory factor analysis have substantiated a one-dimensional structure ( $\chi^2 = 1664.56$ ,  $df = 431$ ,  $p < .001$ ; NNFI = .94; CFI = .94; RMSEA = .068). In the current study, the Cronbach's alpha coefficient for the measurement tool was found to be .83. This indicates a relatively high level of internal consistency or reliability for the items in the scale.

#### Analyzing of Data

In this study, the statistical analysis was conducted using IBM SPSS Statistics 22 and AMOS Graphics. Descriptive statistics were computed to provide a comprehensive overview of the data. Pearson's correlation analyses were then employed to explore the relationships between the variables under investigation. To investigate the relationship between academic locus of control and adolescents' school satisfaction, as well as the potential mediating role of academic procrastination, the study utilized structural equation modeling (SEM). SEM was chosen as the preferred approach due to its ability to simultaneously examine complex relationships among multiple variables and its suitability for modeling latent constructs. SEM allows for the examination of complex relationships among variables and provides insights into direct and indirect effects within a theoretical model. To evaluate the adequacy of the model, several fit indices recommended by Hu and Bentler (1999) were employed. These indices included the  $\chi^2/df$  ratio (with a value ideally below 5.0), SRMR and RMSEA (with values ideally below 0.08), as well as CFI, GFI, IFI, and TLI (with values ideally above 0.90). Prior to conducting the analyses, it is noteworthy that we meticulously examined the conformity of our data to these assumptions. Specifically, we assessed the normality of our data by scrutinizing measures such as skewness and kurtosis, confirming their adherence to the prerequisites for the validity and reliability of our modeling results. The predetermined significance level for the study was set at 0.05.

#### Findings

Table 1 presents mean, standard deviation, skewness, and kurtosis for all study variables. Additionally, it includes the Pearson correlations among the study variables.

*Table 1. Descriptive Statistics and Correlations Among Study Variables (N = 628)*

Variable	1	2	3	4
1. Internal locus of control	–			
2. External locus of control	-.132**	–		
3. Academic procrastination	-.170**	.412**	–	
4. School satisfaction	.233**	-.235**	.368**	–
Mean	12.43	30.39	37.05	68.73
Standard deviation	2.06	8.03	8.62	17.76
Skewness	-1.15	.099	-.038	-.411
Kurtosis	1.392	-.050	-.455	-.370

\*\*  $p < .001$

The internal locus of control demonstrated a significant positive correlation with school satisfaction ( $r = .233, p < .001$ ) and a significant negative correlation with academic procrastination ( $r = -.170, p < .001$ ). On the other hand, the external locus of control exhibited a significant negative correlation with school satisfaction ( $r = -.235, p < .001$ ) and a significant positive correlation with academic procrastination ( $r = 0.412, p < .001$ ).

### Measurement Model

The initial stage of the study involved analyzing a measurement model encompassing four latent variables: internal locus of control, external locus of control, academic procrastination, and school satisfaction. This model incorporated eleven observed variables as indicators for the latent constructs. The fit indices for the measurement model were as follows:  $\chi^2 (38, N = 628) = 183.31, p < .001$ ;  $\chi^2/df = 4.82$ ; CFI = .961; GFI = .947; IFI = .961; NFI = .951; TLI = .943; SRMR = .044; RMSEA = .078, with a confidence interval of [.067, .090]. All standardized factor loadings were determined to be statistically significant, with values ranging from .633 to .914 ( $p < .001$ ). This indicates that all observed variables used to measure the latent constructs had a strong and significant relationship with their respective latent variables.

### Structural Model

Initially, the researchers examined the full mediator model, which did not include direct paths from internal and external academic locus of control to school satisfaction. The results showed that the full mediator model provided an adequate fit to the data:  $\chi^2 (50, N = 628) = 255.39, p < .001$ ;  $\chi^2/df = 5.11$ ; CFI = .945; GFI = .934; IFI = .945; NFI = .932; TLI = .927; SRMR = .067; RMSEA = .081. Additionally, the AIC was 311.39 and ECVI was .497. Subsequently, we further examined a partially mediated model that incorporated direct links from internal and external academic locus of control to school satisfaction. The results indicated that this partially mediated model also demonstrated a satisfactory fit to the data [ $\chi^2 (48, N = 628) = 218.66, p < .001$ ;  $\chi^2/df = 4.56$ ; CFI = .954; GFI = .942; IFI = .954; NFI = .942; TLI = .937; SRMR = .048; RMSEA = .075]. However, the direct path from external academic locus of control to school satisfaction was found to be insignificant ( $\beta = -.023, p > .05$ ). Consequently, we removed the insignificant path and conducted the analysis again (see Figure 1).

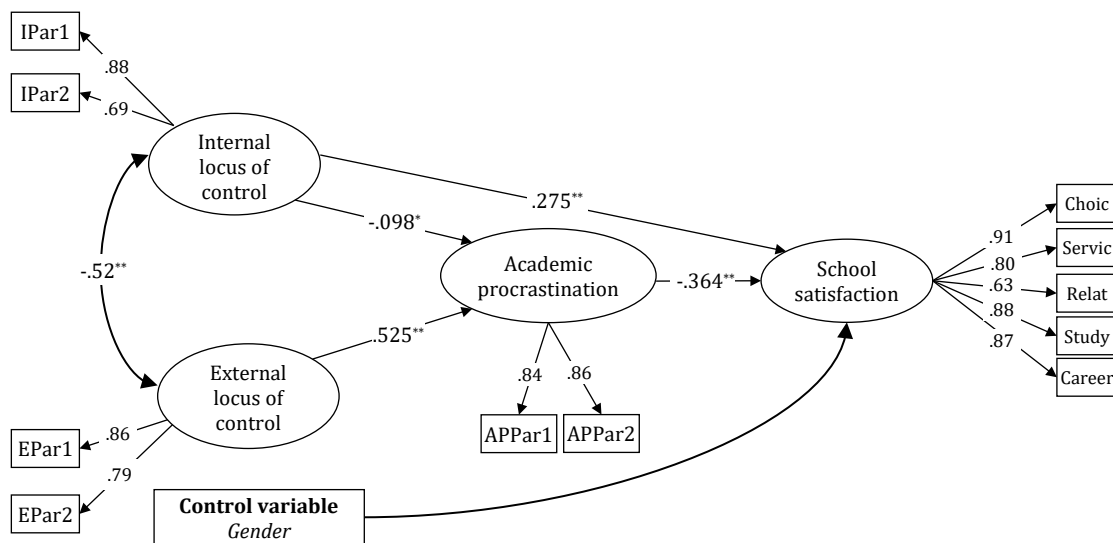


Figure 1. Final Structural Model

The final model, which included the significant paths, demonstrated good fit indices:  $\chi^2 (49, N = 628) = 218.84, p < .001$ ;  $\chi^2/df = 4.46$ ; CFI = .954; GFI = .942; IFI = .954; NFI = .942; TLI = .938; SRMR = .047; RMSEA = .074. Additionally, the AIC was 276.84 and ECVI was .442. All paths in the final model were statistically significant. Internal locus of control negatively affected academic procrastination ( $\beta = -.098, p < .01$ ), while external locus of control had a positive direct effect on academic procrastination ( $\beta = .525, p < .001$ ). School satisfaction was positively predicted by internal locus of control ( $\beta = .275, p < .001$ ) and negatively predicted by academic procrastination ( $\beta = -.364, p < .001$ ). It is understood that the indirect effect of internal locus of control on school satisfaction through academic procrastination was significant ( $\beta = .036, p < .05$ ). Likewise, the indirect effect of external locus of control on school satisfaction through academic procrastination was also significant ( $\beta = -.19, p < .01$ ). See Figure 1 for final model. Finally, it was determined that the variables in the study explained 31% of the total variance in school satisfaction ( $R^2 = .313$ ).

### Discussion

This research allows us to better understand the relationship between internal locus of control, procrastination behavior, and school satisfaction by helping to increase students' motivation and time management skills in Azerbaijan. This, in

turn, is based on setting strategic measures aimed at improving students' academic success and school experience. Conducting this research in Azerbaijan is important for improving the quality of education, student satisfaction and student motivation. We believe that the results of the study will help students learn strategic ways to organize, plan and manage their work. It is important for teachers and counselors as well as students, as research will guide them in developing teaching methods and strategies. The primary objective of our research is to explore the mediating role of procrastination in the association between internal locus of control and school satisfaction.

Previous studies have indicated an inverse relationship between internal locus of control and procrastination behavior. Sari and Fakhruddiana (2019) established a correlation between a reduced internal locus of control and an increased inclination for academic procrastination. Individuals with a high internal locus of control tend to demonstrate a proactive approach towards tasks and are more inclined to complete them promptly and efficiently. These people are able to set their goals and make a proper plan to achieve them. In addition, due to their prioritization skills, they do not complete important tasks first and therefore manage their time effectively. This idea found validation in the model proposed by Zarzycka et al. (2021), where they indicated that internal locus of control exhibits a negative predictive relationship with procrastination behavior. A research by Lay (1986) was conducted on university students with a high internal locus of control. This research shows that people with a high internal locus of control plan their tasks properly and focus better on their goals. People with a low internal locus of control, on the other hand, tend not to act with a sense of productivity in general and find it difficult to be productive in their tasks. These people may deviate from their long-term goals by choosing momentary pleasures and conveniences. Indeed, individuals with a low internal locus of control may exhibit poor time management skills, causing them to procrastinate and delay tasks until the last minute. This tendency to postpone tasks can result in increased stress and pressure as deadlines approach. A study conducted by Prihadi et al. (2018) suggests that internal locus of control plays a direct and influential role in reducing academic procrastination. Also, a study by Senécal et al. (2003) shows that people with a low internal locus of control experience a lack of motivation and are therefore more likely to procrastinate on their tasks.

Research shows that students' satisfaction with school depends in part on their procrastination on their assignments and commitments. An established model by Çıkrıkçı and Erzen (2020) has provided evidence that academic procrastination is associated with reduced satisfaction. There is a negative relationship between procrastination and school satisfaction (Huebner et al., 2004). This corresponds with the discoveries made by Balkis and Duru (2017), who observed an adverse connection between students' academic perfectionism and their contentment with academic life. Accordingly, the low level of satisfaction of the adolescent with school is induced by stress factors caused by the demonstration of academic procrastination tendencies and avoidance of academic tasks (Savithri, 2014). Rustamov, Zalova Nuriyeva, Allahverdiyeva et al. (2023) have demonstrated that procrastination exerts an unfavorable impact on the well-being of students. Further results showed that general negative emotions such as regret, guilt, fear, anxiety, and stress in adolescents were associated with lower school satisfaction and negative perceptions of them as a result of procrastinating actions required to complete academic tasks.

Research suggests that procrastination plays a mediating role between locus of control and school satisfaction. In other words, the study confirmed that adolescents' school satisfaction depends on locus of control both indirectly and directly. School satisfaction is directly affected by procrastination. According to similar studies, adolescents who have an internal locus of control to perform academic tasks tend to take on their responsibilities and tasks and as a result achieve higher school satisfaction (Burger, 2007; Deniz et al., 2009). Besides that, there is an inverse relationship between procrastination and subject satisfaction. Individuals with a strong external locus of control think more negatively about the future, procrastinate because they always believe that external factors are too late, and as a result have lower levels of satisfaction (Saddler & Buley, 1999; Shi et al., 2019). From this aspect, the mediating role of procrastination and the positive relationship between adolescents' locus of control and school satisfaction were determined.

### Conclusion

The purpose of this research was to explore the connection between students' internal locus of control and school satisfaction, as well as to examine the potential mediating role of procrastination in this relationship. The study revealed a robust positive relationship between internal locus of control and school satisfaction. These findings are significant as they offer valuable insights and potential practical implications for understanding and improving students' satisfaction levels in educational settings. Additionally, the research results will be useful for teachers who are engaged in understanding the academic interests of students in Azerbaijani schools and improving the quality of education and teaching. For educators, an understanding of the relationship between internal locus of control, school satisfaction, and procrastination can inform teaching strategies. They may consider implementing interventions or support systems that enhance students' internal locus of control, thus potentially reducing procrastination and increasing overall satisfaction with school. For parents, the study's insights could guide them in fostering a sense of personal control and responsibility in their children. Encouraging children to take ownership of their academic progress and outcomes may contribute to reduced procrastination and a more positive school experience. Policymakers can use these findings to inform education policy decisions. Recognizing the impact of internal locus of control on academic behaviors, they may design programs and policies that promote the development of this trait among students. Such initiatives could ultimately lead to

improved academic performance and well-being among students. In summary, these findings have practical implications that can positively impact the educational experience of students, and they offer guidance for educators, parents, and policymakers to create a more supportive and effective learning environment.

### Recommendations

The study's findings suggest several recommendations for future research in this field. Firstly, it would be beneficial to delve into the factors that influence the development of internal locus of control among adolescents. Understanding these factors can help design interventions and educational programs that foster the cultivation of an internal locus of control in students. Additionally, interventions aimed at reducing academic procrastination should be designed and implemented to enhance students' school satisfaction. Moreover, since external locus of control was found to have a negative impact on school satisfaction, interventions targeting the modification of external attributions and the promotion of a more internal locus of control belief system could be beneficial. It would also be worthwhile to explore the role of other potential mediators in the relationship between locus of control and school satisfaction, such as self-efficacy or motivation. Furthermore, considering the cultural context, conducting comparative studies across different educational systems and cultural backgrounds would provide valuable insights into the generalizability of the findings. Finally, longitudinal studies are recommended to examine the stability of these relationships over time and to capture the developmental trajectory of academic locus of control, academic procrastination, and school satisfaction in adolescence.

### Limitations

As with any research, this research has some limitations. The utilization of a convenience sampling method in this study, although practical for our research purposes, presents certain limitations. Convenience sampling may not fully represent the broader population, potentially limiting the generalizability of our findings to a more diverse student demographic. Differences in results may appear when conducting research in different geographic regions and schools with students with different demographic characteristics. Secondly, our reliance on self-report measures, while common in social science research, introduces the possibility of response bias and the subjectivity inherent in such measures, which could influence the accuracy of our results. In the future, the use of different measurement tools or the further development of measurement tools may ensure that the results are more reliable and accurate. Thirdly, the research uses a cross-sectional design in which data are collected simultaneously. For this reason, a longitudinal study design covering a longer period of time is required to confirm causal relationships. And finally, in this research, determining the relationship between internal locus of control, school satisfaction, and procrastination was the main goal, and it should not be overlooked that a number of factors (e.g., students' motivation levels, socioeconomic status, family support, etc.) may influence the results.

### Ethics Statements

The research was conducted following the guidelines stated in the Helsinki Declaration. This study received approval from the Ethics Committee of the Psychology Scientific Research Institute, Baku, Azerbaijan. The participants provided their written informed consent to participate in this study.

### Authorship Contribution Statement

Rustamov: Conceptualization, design, analysis, writing, final approval, supervision. Zalova Nuriyeva: Writing, data acquisition, data analysis / interpretation, statistical analysis, drafting manuscript. Allahverdiyeva: Writing, critical revision of manuscript, statistical analysis. Abbasov: Technical and material support. Rustamova: Editing, reviewing, final approval.

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