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RESEARCH ARTICLE

An Examination of University Students' Academic Procrastination Levels Based on Various Variables: The Case of Kosovo

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ABSTRACT

This study aims to examine university students' levels of academic procrastination based on various variables. The participants of the research consist of students from Prizren "Ukshin Hoti" University (N = 357). The Academic Procrastination Scale (APS), developed by Çakıcı (2003), was used to determine participants' levels of academic procrastination. The findings of the study reveal that academic procrastination behavior is influenced more by individual or cultural factors than by environmental factors such as parental education level or income. Additionally, differences in academic procrastination levels were observed among university students based on their gender, nationality, and field of study.

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INTRODUCTION

Procrastination is defined as the conscious delay of completing a task or, in other words, postponing an essential activity to a later time (Steel, 2007). This behavior involves an individual's avoidance of taking action as planned, despite having sufficient time and resources to fulfill their responsibilities. Procrastination not only affects various aspects of an individual's life but also presents a complex structure associated with psychological, social, and behavioral factors.

In general, procrastination can be classified into two main types: functional (adaptive) and dysfunctional (maladaptive). Functional procrastination refers to an individual's conscious decision to delay a task with the intention of achieving better performance or utilizing mental resources more effectively. On the other hand, dysfunctional procrastination is characterized by difficulties in completing tasks, leading to negative outcomes such as anxiety, stress, or failure (Chu & Choi, 2005). Dysfunctional procrastination is often associated with factors such as emotional regulation difficulties, low self-discipline, and a lack of motivation (Steel, 2010).

It is observed that procrastination is influenced by individual, environmental, and cultural factors and manifests in various forms across different aspects of life. For instance, procrastination is examined in different contexts, such as occupational procrastination in professional life, personal procrastination in daily life, and academic procrastination in educational settings (Ferrari, Johnson, & McCown, 1995).

Academic procrastination is defined as the deliberate delay in fulfilling educational tasks and is a common phenomenon among both students and academics. This behavior can negatively impact an individual's academic performance, leading to various short-term and long-term issues (Steel, 2007). Academic procrastination is emphasized as having a multidimensional structure linked to individual, environmental, and cultural factors (Ferrari, Johnson, & McCown, 1995).

The causes of academic procrastination are associated with various psychological and social variables such as lack of motivation, time management problems, perfectionism, low self-confidence, poor self-regulation skills, and external stress factors (Klassen, Krawchuk, & Rajani, 2008). Moreover, the impact of cultural context on academic procrastination is increasingly being explored. Notably, the prevalence of procrastination behaviors and the factors contributing to these behaviors differ across cultural groups (Kim & Seo, 2015).

Albanian, Turkish, and Bosnian societies share similar socio-cultural characteristics, striving to balance traditional values with modern life. However, the differences in these groups' education systems, cultural priorities, and individual behavior norms may lead to varying tendencies toward academic procrastination. For instance, attitudes toward education and societal expectations for academic success are significant factors influencing procrastination behaviors (Balkis & Duru, 2009).

In this context, our study aims to identify academic procrastination levels among Albanian, Turkish, and Bosnian societies and understand the psychological and cultural dynamics underlying these behaviors. Additionally, the study will highlight the similarities and differences among these groups, offering valuable insights into the cultural dimension of academic procrastination.

Academic procrastination is defined as the deliberate postponement of completing educational tasks (Solomon & Rothblum, 1984). This behavior is particularly common in academic tasks such as completing assignments, studying for exams, and finishing projects. Solomon and Rothblum (1984) described academic procrastination as students' tendency to intentionally delay academic responsibilities due to psychological reasons such as anxiety, lack of self-confidence, and time management problems. Furthermore, their study emphasized that while academic procrastination may serve as a stress management strategy, it often becomes a barrier to success.

Subsequent research has examined the various dimensions and influencing factors of academic procrastination in greater detail. Milgram, Mey-Tal, and Yuval-Levision (1997) viewed procrastination as a stress-coping mechanism for students and analyzed the impact of time pressure on this behavior. Rothblum, Solomon, and Murakami (1986) investigated the effects of procrastination on anxiety and performance, highlighting that low academic self-confidence and fear of failure are critical triggers of procrastination. Haycock, McCarthy, and Skay (1998) explored the relationship between academic procrastination and self-efficacy, finding that individuals with lower levels of self-efficacy tend to procrastinate more. Additionally, Senècal, Julien, and Guay (2003) emphasized that academic procrastination stems from the interaction between individual and environmental factors, with motivational factors playing a significant role in shaping this behavior.

Academic procrastination can generally be classified into four main types:

1. Avoidance-Based Procrastination: Occurs when individuals avoid tasks due to fear of failure or criticism.
2. Indecision-Based Procrastination: Arises from an inability to decide which task or method to prioritize.
3. Inattention or Motivation-Based Procrastination: Results from low intrinsic motivation or external influences.
4. Active Procrastination: Involves a conscious decision to delay a task strategically, aiming for better performance (Chu & Choi, 2005).

In this context, it is believed that academic procrastination behaviors may manifest differently among culturally similar groups, such as Albanian, Turkish, and Bosnian societies, which share similarities but differ in family structures and values. This study aims to examine university students' academic procrastination levels based on various variables.

In line with this general aim, the following sub-questions will be addressed:

- What are the academic procrastination levels of university students based on gender?
- What are the academic procrastination levels of university students based on their mothers' education levels?

- What are the academic procrastination levels of university students based on their fathers' education levels?
- What are the academic procrastination levels of university students based on their family income levels?
- What are the academic procrastination levels of university students based on their fields of study?
- What are the academic procrastination levels of university students based on their nationalities?

METHOD

The study aims to determine whether academic procrastination levels differ according to independent variables. A quantitative approach was adopted, and the study follows a general survey model.

Study group

The study group consists of students enrolled in the primary education and preschool education programs at Prizren "Ukshin Hoti" University.

Table 1: Demographic distribution of participants

Descriptive		Elementary Education Program		Preschool Teaching Program	
		N	%	N	%
Gender	Female	122	55.2%	97	71.3%
	Male	99	44.8%	39	28.7%
Mather_education	Literate	8	3.6%	0	0.0%
	Primary education	60	27.1%	9	6.6%
	High school	110	49.8%	87	64.0%
	Undergraduate level	43	19.5%	40	29.4%
Father_education	Literate	3	1.4%	0	0.0%
	Primary education	39	17.6%	8	5.9%
	High school	115	52.0%	76	55.9%
	Undergraduate level	56	25.3%	47	34.6%
	Postgraduate	8	3.6%	5	3.7%
Economic status	Low	14	6.3%	13	9.6%
	Moderate	171	77.4%	91	66.9%
	High	28	12.7%	26	19.1%
	Very high	8	3.6%	6	4.4%
Nationality	Turk	51	23.1%	39	28.7%
	Albanian	123	55.7%	58	42.6%
	Bosnian	47	21.3%	39	28.7%
Total		221		136	

In the primary education department, the distribution of female students (55.2%) and male students (44.8%) is relatively balanced, whereas in the preschool education department, there is a notable majority of female students (71.3%). This distribution aligns with the traditional preference for preschool education as a field predominantly chosen by women.

In both departments, the majority of mothers are high school graduates (primary education: 49.8%, preschool: 64.0%). However, in the primary education department, the proportion of mothers who are elementary school graduates (27.1%) is significantly higher than in the preschool department

(6.6%). Conversely, the preschool department has a higher percentage of mothers with university degrees (29.4%). Similarly, in both departments, the majority of fathers are high school graduates (primary education: 52.0%, preschool: 55.9%). The percentage of fathers with university degrees is higher in the preschool department (34.6%) compared to the primary education department (25.3%). Postgraduate education rates are similar in both departments.

The majority of students in both departments fall into the middle-income group (primary education: 77.4%, preschool: 66.9%). However, the proportion of students in the high-income group is higher in the preschool department (19.1%) compared to the primary education department (12.7%).

In the primary education department, the proportion of Albanian students (55.7%) is significantly higher than other groups. In the preschool department, although the proportion of Albanian students (42.6%) is still the highest, the proportions of Turkish (28.7%) and Bosnian (28.7%) students are equal.

These demographic distributions suggest that the preschool education department is predominantly chosen by students from higher socioeconomic backgrounds.

Data collection tools

To determine the academic procrastination levels of university students, the Academic Procrastination Scale (APS) developed by Çakıcı (2003) was used. This scale, which consists of 19 items, aims to measure students' procrastination behaviors related to academic responsibilities such as studying for courses, preparing for exams, and completing projects. The Cronbach's Alpha internal consistency coefficient for the measurement tool is 0.87, and the test-retest reliability coefficient is 0.89, indicating sufficient reliability. The scale is a 5-point Likert type ranging from "Does not reflect me at all" (1) to "Completely reflects me" (5) and includes 12 negative and 7 positive statements.

In terms of validity, factor analysis was performed to assess the construct validity of the scale, revealing a two-factor structure. These findings support the scale as a valid and reliable tool for measuring academic procrastination behaviors.

Data analysis

In this study, the academic procrastination behaviors of teacher candidates were examined in terms of various variables. First, the data was checked for consistency. The scale included 7 reverse-coded items (e.g., "I regularly study for my classes"), which were recoded accordingly. The academic procrastination score for each participant was then calculated.

Table 2: Descriptive statistics

Valid	357
Missing	0
Mean	2.946
Std. Deviation	0.937
Shapiro-Wilk	0.92
P-value of Shapiro-Wilk	< .001
Minimum	1.316
Maximum	4.474

A total of 357 teacher candidates participated in the study, and there is no missing data in the dataset. This indicates that the dataset is complete and all analyses were conducted using the same sample size. The average score obtained from the Academic Procrastination Scale is 2.946, with a standard deviation of 0.937. These values suggest that the scores have a moderate spread around the mean. The minimum value is 1.316, and the maximum value is 4.474. These values show that the full range of scores on the scale was utilized. According to the results of the Shapiro-Wilk normality test ($W = 0.92$, $p < 0.001$), the scores significantly deviate from a normal distribution.

Since the academic procrastination scores do not follow a normal distribution, a Bayesian approach was decided to be used for the analyses. For variables with two categories (such as gender and department), a Bayesian independent sample t-test was performed. Mann-Whitney was calculated,

and a sample size of 1000 was used. For variables with three or more categories (such as mother's education, father's education, and nationality), Bayesian ANOVA was applied. In the Bayesian analyses, the Bayes factor (BF10) was calculated. The interpretation of this value was based on the criteria suggested by Dienes (2014), as shown in Table 3.

Table 3: BF10 evaluation criteria

BF_{10} Value	Interpretation
> 100	Extraordinary evidence for H1
30 – 100	Very strong evidence for H1
10 – 30	Strong evidence for H1
3 – 10	Moderate evidence for H1
1 – 3	Anecdotal (weak) evidence for H1
1	No evidence
1/3 – 1	Anecdotal (weak) evidence for H0
1/3 – 1/10	Moderate evidence for H0
1/10 – 1/30	Strong evidence for H0
1/30 – 1/100	Very strong evidence for H0
< 1/100	Extraordinary evidence for H0

FINDINGS

Findings regarding gender

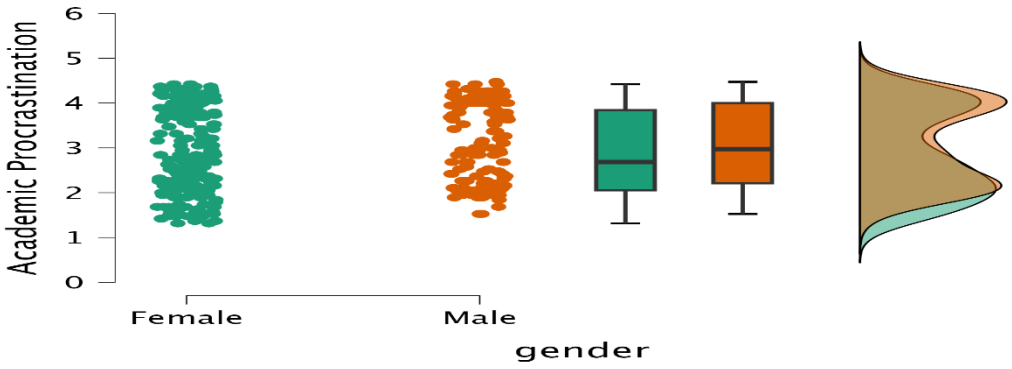

Figure 1: Distribution of academic procrastination scores by gender

Figure 1 shows the distribution of academic procrastination behavior by gender through a raincloud plot. The median values and standard deviations for both genders are similar, with procrastination scores ranging from approximately 1.5 to 4.5. The two peaks seen in the density curves for both females and males indicate the presence of two different subgroups in academic procrastination behavior. A Bayesian independent sample t-test was conducted to compare academic procrastination levels by gender.

Table 4: Mean, standard deviation, and Bayesian factor by gender

Group	N	Mean	SD	BF_{10}	W	Rhat
Female	219	2.854	0.96	3.41	12850.5	1.019
Male	138	3.093	0.89			

As expressed in Table 4, the sample size for female students (N=219) is higher than that of male students (N=138). This aligns with the overall student distribution in educational faculties. Looking at the mean values, male students have a higher academic procrastination score (M=3.093) compared to female students (M=2.854). When examining the standard deviation values, it is observed that female students' scores (SD=0.96) show a slightly higher dispersion than male students' scores

(SD=0.89). The Bayes factor (BF_{10}=3.41) provides moderate evidence that gender has a significant effect on academic procrastination. Since the BF_{10} value is greater than 3, it indicates that the difference between genders is not random. The Rhat value (1.019) indicates that the Markov Chain Monte Carlo (MCMC) sampling has converged. This value, being close to 1, suggests that the Bayesian analysis produced reliable results. The W statistic (12850.5) is a value that takes into account sample size and group differences. This value supports that the difference between gender groups is consistent.

Findings regarding mother's education

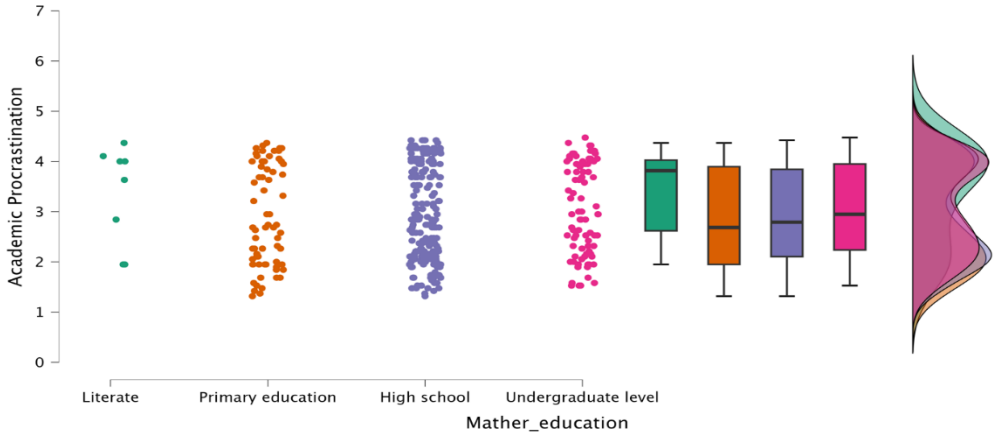

Figure 2: Distribution of academic procrastination scores by mother's education level

According to Figure 2, the academic procrastination scores based on the mother's education level are as follows:

- Children of literate mothers have scores ranging from 2.0 to 4.5.
- Children of mothers with primary school education show scores ranging from 1.5 to 4.3.
- Children of mothers with high school education have scores between 1.5 and 4.4.
- Children of mothers with university education show scores between 1.5 and 4.5.

Looking at the box plots, it can be seen that the median values are quite similar. This suggests that the mother's education level does not have a significant impact on academic procrastination behavior. Upon examining the density curves on the right, a similar distribution pattern is observed across all education levels. This indicates that the mother's education level does not significantly affect the distribution of academic procrastination scores.

Table 5: Average and standard deviation by mother's education level

Mather education	N	Mean	SD
Literate	8	3.355	0.98
Primary education	69	2.855	0.982
High school	197	2.918	0.932
Undergraduate level	83	3.049	0.904

In Table 5, the distribution of the sample shows that the largest group consists of children whose mothers have a high school education (N=197). This is followed by university-educated mothers (N=83), primary school-educated mothers (N=69), and literate mothers (N=8). The small sample size of the literate group limits the reliability of conclusions drawn from this group.

Looking at the average values, it is observed that children of literate mothers have the highest academic procrastination scores (M=3.355). This is followed by children of university-educated mothers (M=3.049), high school-educated mothers (M=2.918), and primary school-educated mothers (M=2.855). The standard deviation values across all groups are quite similar (ranging from 0.904 to 0.982), indicating that the spread of scores is similar regardless of the mother's education level.

Table 6: Bayesian ANOVA results by mother's education level

Models	P(M)	P(M|data)	BF_M	BF_{10}	error %
Null model	0.5	0.927	12.716	1	
Mather education	0.5	0.073	0.079	0.079	0.003

According to the results presented in Table 6, the prior probability for the Null model (null hypothesis model) was set at P(M) = 0.5. Based on the data, the posterior probability of this model was calculated to be P(M|data) = 0.927. This high posterior probability indicates that the null hypothesis is strongly supported. The Bayes Factor for the mother's education model (BF_{10} = 0.079) is less than 1. This value suggests that the mother's education status does not have a significant effect on academic procrastination. In other words, the data supports the null hypothesis approximately 12.7 times (1/0.079) more than the alternative hypothesis. The Model Comparison Bayes Factor (BFM = 0.079) similarly shows that the model for the mother's education status is not supported by the data. The very low error rate (%0.003) indicates that the Bayesian analysis produced reliable results. These findings strongly support the idea that the mother's education status does not have a significant impact on students' academic procrastination behavior.

Findings regarding father's education status

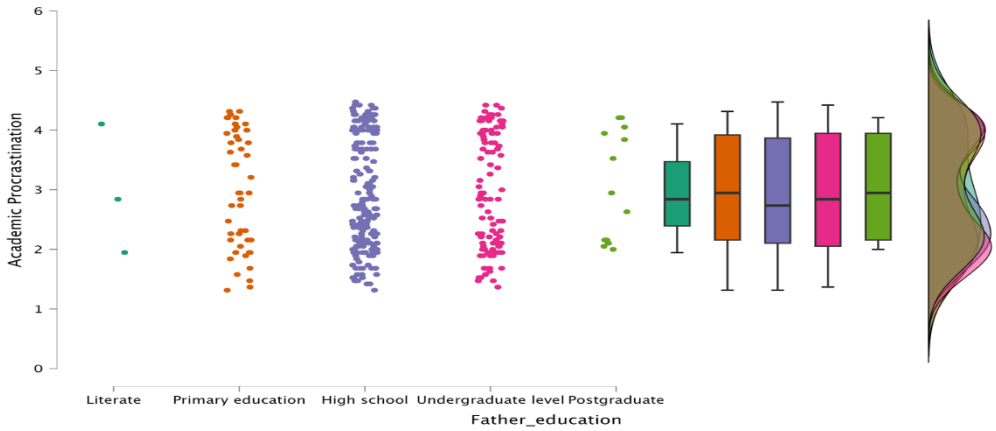

Figure 3: Distribution of academic procrastination scores by father's education level

The distribution of academic procrastination scores according to father's education levels is as follows:

- Children of literate fathers have scores ranging from approximately 2.0 to 4.0.
- Children of fathers with elementary school education have a wide range of scores, from 1.3 to 4.3.
- Children of fathers with high school education have scores between 1.3 and 4.4.
- Children of fathers with university education have scores ranging from 1.5 to 4.4.
- Children of fathers with postgraduate education have scores between 2.0 and 4.2.

The proximity of the median lines in the boxplots indicates that father's education level does not have a strong effect on academic procrastination. The density curves on the right show a similar distribution pattern across all education levels. This supports the idea that father's education level does not significantly affect the distribution of academic procrastination scores.

Table 7: Mean and standard deviation by father's education level

Father education	N	Mean	SD
Literate	3	2.965	1.084
Primary education	47	2.985	0.969

High school	191	2.942	0.918
Undergraduate level	103	2.919	0.972
Postgraduate	13	3.065	0.918

The majority of fathers of the students participating in the study are high school graduates. They are followed by university and elementary school graduates. The number of fathers with postgraduate education and those with literacy level is quite low. In terms of academic procrastination scores, the highest average is observed among children of fathers with postgraduate education, followed by children of elementary school graduates, literate fathers, high school graduates, and university graduates. However, the very small differences between the averages suggest that father's education level does not have a significant impact on academic procrastination behavior. The standard deviation values of the groups are also quite similar. This indicates that the distribution of academic procrastination scores is independent of the father's education level. In other words, the variability in students' academic procrastination behavior is not influenced by the education level of their fathers.

Table 8: Bayesian ANOVA results for father's education level

Models	P(M)	P (M|data)	BF_M	BF_{10}	error %
Null model	0.5	0.979	47.365	1	
Father education	0.5	0.021	0.021	0.021	0.013

In Table 8, the prior probability for the null model was initially set to 0.5. After analyzing the data, the posterior probability for this model increased to 0.979. This indicates that the null hypothesis is very strongly supported by the data. The Bayes Factor (BF10) for the father's education model was calculated as 0.021. This value is much smaller than 1 and suggests that the null hypothesis is supported approximately 47.6 times (1/0.021) more than the alternative hypothesis. This result provides very strong evidence that the father's education level does not have a significant effect on academic procrastination. The model comparison Bayes Factor (BFM) was also found to be 0.021, further confirming that the father's education model is not supported by the data. The very low error rate of the analysis (0.013%) suggests that the obtained results are reliable. Taken together, these findings lead to the conclusion that the father's education level does not have a significant effect on students' academic procrastination behavior. This result suggests that academic procrastination behavior is more influenced by individual factors, and the parents' education level does not play a determining role in this regard.

Findings related to family income level

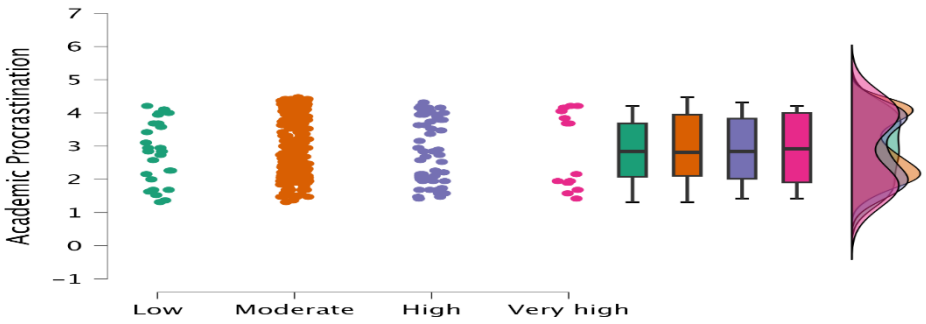

Figure 3: Academic procrastination score distributions by family income level

The distribution of academic procrastination scores by income levels is as follows:

- Students in the low-income group have scores ranging from approximately 1.3 to 4.2.
- Students in the middle-income group have scores ranging from 1.3 to 4.5.
- Students in the high-income group have scores ranging from 1.5 to 4.3.
- Students in the very high-income group have scores ranging from 1.5 to 4.2.

Looking at the boxplots, the median lines are close to each other across all income groups. This suggests that income level does not have a significant effect on academic procrastination behavior. The density curves on the right also show similar distribution patterns across all income levels. The higher number of data points in the middle-income group indicates that the sample is concentrated in this group. This suggests that the research results may be more reliable for the middle-income group.

Table 9: Mean and standard deviation by family income level

Economics status	N	Mean	SD
Low	27	2.836	0.951
Moderate	262	2.976	0.924
High	54	2.87	0.95
Very high	14	2.891	1.152

When examining the sample distribution, the largest group is composed of families with middle-income (N=262). This is followed by high-income (N=54), low-income (N=27), and very high-income (N=14) groups. The very high-income group has a very small number of students, which limits the generalizations that can be made for this group.

Looking at the average values, it is observed that the scores across all income groups are very close to each other. The highest academic procrastination average is found in the middle-income group (M=2.976), while the lowest average is observed in the low-income group (M=2.836). The high-income (M=2.87) and very high-income (M=2.891) groups have averages that are also similar to the other groups. The standard deviation values are very close among the low, middle, and high-income groups (0.951, 0.924, and 0.95, respectively), while the very high-income group has a slightly higher standard deviation (1.152). This indicates that academic procrastination scores in the very high-income group spread across a wider range compared to the other groups. These findings suggest that family income level does not have a significant effect on students' academic procrastination behavior.

Table 10: Bayesian ANOVA results by family income level

Models	P(M)	P(M|data)	BF_M	BF_{10}	error %
Null model	0.5	0.953	20.294	1	
Economis status	0.5	0.047	0.049	0.049	0.005

The prior probability for the null hypothesis model (null model) was initially set to 0.5. After analyzing the data, the posterior probability of this model increased to 0.953. This result shows that the null hypothesis is strongly supported by the data. The Bayes Factor (BF10) for the income level model was calculated as 0.049. This value, being much smaller than 1, indicates that the null hypothesis is approximately 20.4 times (1/0.049) more supported than the alternative hypothesis. This result provides strong evidence that income level does not have a significant effect on academic procrastination. The Model Comparison Bayes Factor (BFM) was also found to be 0.049. This value confirms that the income level model is not supported by the data. The very low error rate of the analysis (%0.005) shows that the results are reliable. When considering all these findings together, it can be concluded that family income level does not have a significant effect on students' academic procrastination behavior. This result suggests that academic procrastination behavior is influenced more by individual traits than by socioeconomic factors.

Findings related to the department variable

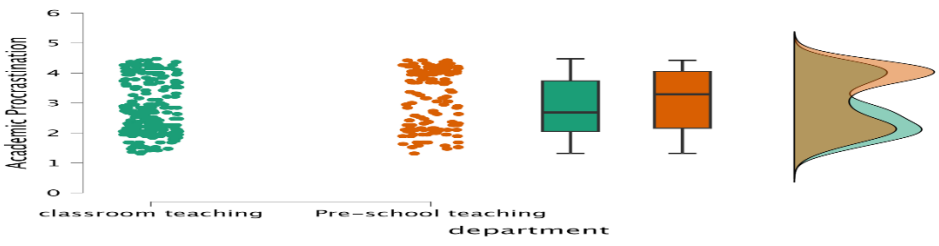

Figure 3: Distribution of academic procrastination scores by department

When examining the scatter points, it is observed that academic procrastination scores in both departments range from approximately 1.3 to 4.5. The distribution of the scores shows a similar pattern in both departments; however, it is noted that the scores of preschool teaching students are somewhat more concentrated at the higher end. When looking at the box plots, the median value of preschool teaching students is slightly higher than that of classroom teaching students. The sizes of the boxes (interquartile ranges) are similar in both departments, indicating that the spread of the scores is similar. The density curves on the right show the shape of the score distributions for both departments. While the general structure of the curves is similar, the curve for preschool teaching is slightly shifted to the right (towards higher scores). This suggests that preschool teaching students may have slightly higher tendencies for academic procrastination.

Table 11: Mean, standard deviation, and bayesian factor by department

Group	N	Mean	SD	BF_{10}	W	Rhat
classroom teaching	221	2.831	0.912	2.837	12321	1.023
Pre-school teaching	136	3.133	0.949			

In terms of sample size, classroom teaching students (N=221) outnumber preschool teaching students (N=136). This is consistent with the general student distribution in the faculty of education. When examining the mean values, preschool teaching students have a higher academic procrastination score (M=3.133) compared to classroom teaching students (M=2.831). Although the standard deviation values are close, the scores of preschool teaching students (SD=0.949) show slightly more variation than those of classroom teaching students (SD=0.912). The Bayes factor (BF_{10}=2.837) provides moderate evidence for a significant effect of the department variable on academic procrastination. This value indicates that the difference between the departments is not random. The Rhat value (1.023) shows the convergence of the Markov Chain Monte Carlo (MCMC) sampling. The closeness of this value to 1 suggests that the Bayesian analysis produces reliable results. The W statistic (12321) also supports the consistency of the difference between the departments.

Findings related to the nationality variable

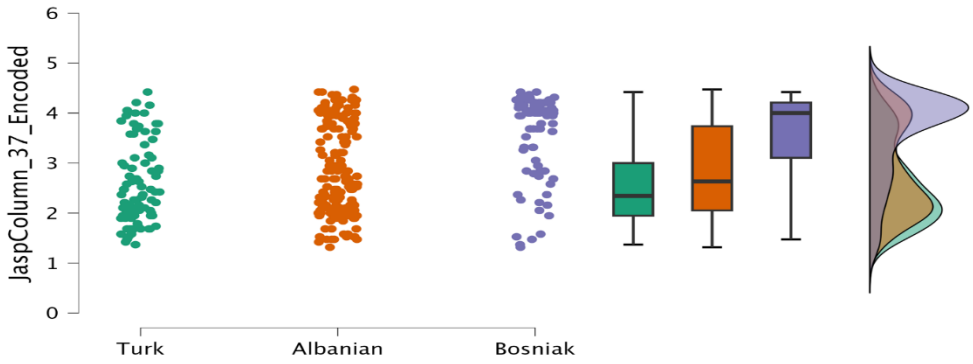

Figure 4: Distribution of academic procrastination scores by nationality

Upon examining the scatter points, it is observed that academic procrastination scores range from approximately 1.3 to 4.5 across all groups. Notably, the scores of Bosnian students are more concentrated in the higher range. When comparing the median lines of the box plots, it is clear that Bosnian students have higher median values than the other groups. The median value of Albanian students is slightly higher than that of Turkish students. Looking at the size of the boxes (interquartile range), it is observed that the distribution of Bosnian students is narrower, meaning their scores are more homogeneous. The density curves on the right show the overall distribution shape of the groups' scores. The curve of Bosnian students is more to the right (higher scores) and sharper, indicating that the academic procrastination levels of this group are higher and more closely clustered. The distributions of Turkish and Albanian students, however, show a more similar structure. This visual analysis suggests that nationality may have an impact on academic procrastination behavior, with Bosnian students showing a higher tendency for academic procrastination compared to the other groups.

Table 12: Mean and standard deviation by nationality

Nationality	N	Mean	SD
Turk	90	2.55	0.791
Albanian	181	2.837	0.896
Bosniak	86	3.591	0.841

When examining the sample sizes, the largest group consists of Albanian students (N=181), followed by Turkish (N=90) and Bosnian (N=86) students, whose numbers are similar. The sufficient sample sizes indicate that the comparisons between groups are reliable.

When examining the mean values, notable differences between the groups are observed. The highest academic procrastination average is found among Bosnian students (M=3.591), followed by Albanian (M=2.837) and Turkish (M=2.55) students. This result suggests that Bosnian students exhibit higher academic procrastination tendencies compared to the other groups.

The standard deviation values are similar across all groups. Albanian students show slightly more variability in their scores (SD=0.896), while Turkish students' scores are more homogeneous (SD=0.791). The standard deviation for Bosnian students (SD=0.841) falls between these two values. These findings suggest that nationality might have a significant impact on academic procrastination behavior. The notably higher tendency for academic procrastination among Bosnian students raises the possibility of cultural factors playing a role in this behavior.

Table 13: Bayesian ANOVA results by nationality

Models	P(M)	P(M|data)	BF_M	BF_{10}	error %
Null model	0.5	1.877×10^{-12}	1.877×10^{-12}	1	
Nationality	0.5	1	$5.328\times10^{+11}$	$5.328\times10^{+11}$	0.015

For the null hypothesis model (prior probability), an initial prior probability of 0.5 was set. However, after analyzing the data, the posterior probability of this model decreased to a very low value ($P(M|data) = 1.877 \times 10^{-12}$). This indicates that the null hypothesis is almost not supported by the data. The Bayesian Factor (BF10) for the nationality model was calculated to be an extremely high value of 5.328×10^{11}. This value shows that the nationality variable has a very strong effect on academic procrastination. In other words, the nationality model is supported 532.8 billion times more than the null hypothesis. The Model Comparison Bayesian Factor ($BFM = 5.328 \times 10^{11}$) similarly strongly supports the nationality model. The posterior probability of the nationality model ($P(M|data) = 1$) reaching its maximum value indicates that this model fits the data perfectly. The very low error rate of the analysis (0.015%) shows that the results are extremely reliable. These findings demonstrate that nationality has a very strong and decisive effect on academic procrastination behavior.

Table 14: Post-Hoc Bayesian ANOVA results by nationality

Group		Prior Odds	Posterior Odds	$BF_{10,U}$	error %
Turk	Albanian	0.587	1.847	3.144	0.007
	Bosniak	0.587	$2.870\times10^{+11}$	$4.886\times10^{+11}$	3.495×10^{-14}
Albanian	Bosniak	0.587	$1.665\times10^{+7}$	$2.834\times10^{+7}$	3.471×10^{-14}

The Bayes Factor (BF10,U=3.144) obtained in the comparison between Turkish and Albanian students provides moderate evidence. This result indicates that there is a significant difference in academic procrastination levels between Turkish and Albanian students, but the difference is not very strong. In the comparison between Turkish and Bosnian students, a very high Bayes Factor (BF10,U=4.886×10+11) was obtained. This result indicates a very strong difference between the two groups. Considering the previous findings, it is clear that Bosnian students show significantly higher academic procrastination tendencies compared to Turkish students. In the comparison between

Albanian and Bosnian students, a quite high Bayes Factor (BF10,U=2.834×10+7) was found. This result shows that there is also a strong difference between these two groups. It is clear that Bosnian students also show higher academic procrastination tendencies compared to Albanian students. The very low error rates in all comparisons support the reliability of the results. These findings reveal that Bosnian students, in particular, differ significantly from the other two groups.

In conclusion, students' academic procrastination scores vary according to their nationality, department, and gender, and these differences are supported by the data.

CONCLUSION

As a result of the findings obtained in the research, the following conclusions were reached:

Male students in the study were found to have higher levels of academic procrastination compared to female students. It was concluded that the educational level of the participants' mothers and fathers did not have a significant effect on academic procrastination. The participants' income levels were found to have no significant effect on academic procrastination behavior. When looking at the academic procrastination levels based on the participants' departments, students in the preschool teaching department had higher academic procrastination scores compared to the classroom teaching students. When comparing academic procrastination levels based on the participants' nationalities, Bosnian students were found to have significantly higher levels of academic procrastination compared to Turkish and Albanian students. This suggests that cultural factors may play a role in academic procrastination behavior.

The general results of the study show that academic procrastination behavior is more influenced by individual and cultural factors rather than environmental factors such as parental education level or income. The higher academic procrastination tendency among Bosnian students, in particular, indicates that this behavior may be associated with societal or cultural influences.

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