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Are Academic Procrastination Behaviours of Engineering Students Related to their Mindfulness Levels?

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Abstract

Mindfulness is to give attention to the current mainstream and open mind and to accept whatever is taking place at this moment. Academic procrastination usually involves delaying tasks and studies of academic origin for irrational reasons. Increasing the quality of students in higher education is important in terms of improving the total education quality of our country. Especially knowledge-based and teacher-cantered approaches seen in engineering curriculums make it difficult for us to see the quality of students. Therefore, this study examines whether there is a relationship between mindfulness levels and academic procrastination behaviours that affect the effective learning and achievement of the student by taking the student to the center. This study designed as a survey model. The data of the research were carried out in eight different departments of the mentioned university with 400 participants (152 females, 248 males) studying at Istanbul Technical University. Demographic Information Form, Mindful Attention Awareness Scale (MAAS) and Academic Procrastination Scale (APS) data collection instruments were applied to the individuals who participated in the research. IBM SPSS Statistics 25 program was used to analyze the data. One-way ANOVA and T-test were used for normal distribution data, Man Whitney U and Kruskal Wallis tests, which are non-parametric equivalents of these tests, were used for data with non-normal distribution. The Pearson correlation test was used to determine the relationships between variables. As a result of the analyses, it was determined that the relationship between mindfulness and academic procrastination was positive and low level. The findings of the study were discussed in the light of the literature and suggestions were presented.

Keywords: Mindfulness, Academic Procrastination, Engineering

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Introduction

Engineering is engagement in a systematic practice of design to achieve solutions to particular human problems (National Research Center, 2012). Engineering students are not only students of engineering, but also of the problems and solutions that may well go beyond their own engineering expertise, or even engineering as a whole. Many programme seem not even aware that there is a problem in focusing almost completely on technical knowledge and processes in their engineering curriculum (Grasso and Burkins, 2010). Technical expert knowledge can be learnt, its shelf life is short. Personal and professional capabilities can not be learnt but have to be developed; they last a lifetime. Students need to see the engineering profession as more than just excelling in technical rigour. Indeed, expert levels in many skills can only be gained by years of experience in engineering practice and not in a university classroom. But tomorrow's job market expects that young engineers are capable to build up experience rapidly, with little support from their employer. Young engineers will therefore only be successful when they have mastered the basics of these (inter)personal and professional skills at graduation. Since the residue of knowledge and habits of mind that students take away from an academic degree programme are greatly determined by how, and how well, they were taught, the how we teach will become equally or even more important than the what and how much we teach (Kamp,2014). In their study, Rieken & Schar (2017) and Huerta (2018) found that the intrapersonal and interpersonal skills that engineers should have are closely related to the concept of mindfulness.

The concept of mindfulness comes from the word "sati" in Pali language. Sati means to remember. In the model of consciousness, it is generally used to mean the existence of the mind (Nyanaponika, 1972; cited in Tuncer, 2017). "Remembering", which is part of this concept, does not mean living with memories. Acceptance of memories means redirecting attention to current experiences (Özyeşil, 2011). Mindfulness is defined as "the awareness that arises by paying attention, on purpose, in the present moment and non-judgmentally" (Williams & Kabat-Zinn, 2013). Demir (2014) stated that the high mindfulness of individuals has a positive effect on emotion regulation, decrease in responsiveness, empathy skills and cognitive flexibility and development of interpersonal relations. Also, studies on mindfulness; it has been observed that individuals with high mindfulness have increased their skills in positive emotions, optimism (Schonert-Reichl & Lawlor, 2010), academic performance, social skills (Beauchemin, Hutchins and Patterson, 2008). To describe a theoretical structure in mind, in terms of an application made for awareness-raising (e.g. meditation), as well as a psychological process (conscious awareness) is used (Germer, Siegel & Fulton, 2005). Mindfulness is a simple way of taking a step towards positive personal transformation (Siegel, Germer & Olendzki, 2009). According to Kabat-Zinn, the present is to give attention to the present, the main purpose (Kabat-Zinn, 2012). Bishop et al. (2004) referred to two components of mindfulness as 'attention regulation', which means maintaining attention over experience to recognize current mental events, and 'directing experience' characterized by openness, acceptance and openness to experience. Individuals are aware of their thoughts, intentions, and emotions as they are aware of the senses and perceptual stimuli. Mindfulness involves both awareness and attention; awareness is the 'radar' of consciousness, which constantly follows the inner and outer world. One can be aware of stimuli without being in the centre of attention (Brown & Ryan, 2003). Attention is the process of focusing our mindfulness, which causes us to be more responsive to a limited set of experiences (Westen, 1999). Mindfulness can be

defined as increased attention and awareness against current experience or current reality, although attention and awareness are relatively constant characteristics of normal functioning (Brown & Ryan, 2003). In the literature, this concept, it is used to define a theoretical model, applications for awareness and a psychological process (Ülev, 2014). In recent years, the concept of mindfulness has attracted the attention of researchers (Baer, 2003; Bao, Xue & Kong, 2015; Can, 2017; Demir; 2017; Chiesa & Serretti, 2010; Keceli, 2017; Kocaoglu, 2017; Wang & Kong, 2014; Ülev, 2014; Demir & Demir, 2018). It has been supported by much academic research in which mindfulness strategies have positive results for individuals (Davis, Daphe M; Hayes, & Jeffrey A. 2011). Positive effects such as emotional regulation, increased empathy and decreased responsiveness, increased cognitive flexibility, improvement of personal and interpersonal relationships (Cahn & Polich, 2006; Lutz, Dunne, & Davidson, 2007; Valentine & Sweet, 1999) and emotional regulation (Broderick & Metz, 2009) they were seen in better condition (cited in Karabacak Demir & Demir, 2016). Recent research indicates that both the stress level of the individuals and the university adaptation process are closely related to the concept of mindfulness (Bao, Xue & Kong, 2015). In the studies conducted with university students, it was observed that the students who had a high level of mindfulness had lower levels of stress (Ülev, 2014; Weinstein et al., 2009). In studies conducted with first-grade university students, it was found that mindfulness and adaptation to university were positively correlated with temperament traits (Bergin and Pakenham, 2016; Mettler, Carsley, Joly & Heath, 2017; Sağel-Çetiner, Sayın-Karakaş, Selçuk & Şakiroğlu, 2018). In other words, it is observed that students with high mindfulness level are more successful in university compliance. When cognitive skills such as academic achievement and mindfulness are associated, it can be considered that mindfulness may be related with the other academic process for example, academic procrastination. When the relevant literature is examined, there are few studies examining the relationship between mindfulness and academic procrastination. Sirois & Tosti (2012) and Bedel (2017) found a positive relationship between mindfulness and academic procrastination.

Academic procrastination is the postponement of the academic tasks that are planned to be carried out for a later time (Lay, 1986; quoted by Uzun Özer, 2009). Academic procrastination can be considered as the situation in which general procrastination behaviour is experienced in education (Sarıkaya Aydın & Koçak, 2016). Students who are prone to academic procrastination are always possible for them to fail academically because they have left their behaviours to fulfil academic tasks (Çelik & Odacı, 2015. Also, procrastination behaviour was found to be effective in psychological factors. Self-efficacy, self-confidence with academic procrastination (Van Eerde, 2000); self-esteem (Ferrari & Scher, 2000); and internal motivation (Senecal et al., 1995; Lee, 2005). Öksüz & İçli (2012) concluded that there is a negative relationship between organizational commitment and procrastination behaviours. Inability to direct success direction (Howell & Watson, 2007; Pfister, 2002), lack of motivation (Franziska, Manfred & Stefan, 2007), inability to manage time (Burns, Dittman, Nguyen and Mitchelson, 2001), depression, irrational beliefs such as negative mental disorders and anxiety (Bridges and Roig, 1997; Solomon and Rothblum, 1984; Steel, 2007; Watson, 2001) and self-perception (Ferrari, Driscoll and Diaz-Morales, 2007) are among the factors that cause delay (Çetin & Ceyhan, 2017). There are many different reasons for students' academic procrastination behaviours. In line with the researches, it is seen that these reasons are the factors originating from the characteristics of the learning task and the characteristics of the individual (Vural & Gündüz, 2019). As a result, the personality

traits of the individual, motivation, unrealistic expectations, inability to manage, depression, fear of failure, self-esteem, self-efficacy beliefs, perfectionism, high anxiety level, satisfaction with school achievement, low level of responsibility, learning strategies, are reasons for procrastination tendency.

Significance and Purpose of Research

One of the best ways to create a healthy and productive society is to help students overcome their cognitive, affective, and behavioural problems in line with their developmental stages. The speed of today's technology and consequently the attention problems of individuals are not able to stay at the moment makes mindfulness difficult. In addition to mindfulness, procrastinating the tasks and studies given in the school negatively affects the success of the student. This research on university students is important in terms of providing psychological feedback, such as recognizing individual differences of students and their active participation in teaching activities. When the studies are examined, it is seen that there are studies in the field of Social and Health. However, research on Engineering Faculties is limited. For example; some study explored the relationship between mindfulness and innovation in engineering and found that dispositional mindfulness significantly correlated with innovation self-efficacy among students (Rieken et al,2016; Rieken and Schar, 2017; Huerta, 2018). Research data are expected to contribute to the literature related to this aspect. Given all the above explanations, this study aimed to investigate the relationship between engineering students' mindfulness and academic procrastination and to find out whether these variables differ in terms of some demographic characteristics. To this end, the following questions were asked:

1. What are the level of the mindfulness and academic procrastination behaviours of the engineering students?

2. Do the engineering students' mindfulness levels and academic procrastination behaviours differ in terms of gender, grade, department, graduated high school type, perceived income level, the region of the birth, number of siblings and place of residence?

3. Is there a meaningful relationship between the engineering students' mindfulness levels and academic procrastination behaviours?

Method

In this section, the research model, the study group, the data collection ınstruments used in the research and the information about the analysis of the data have been shown.

Research Model

This research is designed as a survey model. The survey model is used to investigate the existence of a change between two or more variables with a sample taken from the universe to make a statement about the universe. In the case of a relationship between variables, the degree of this relationship is tried to be determined (Karasar, 2014). In this research, the mindfulness levels of university students who continue their education in different engineering faculties and academic the relationship between procrastination behaviours were tried to be determined.

Study Group

The study group was selected by the convenience sampling method, which is one of the

non-random sampling methods. Convenience sampling, the sample is chosen from easily accessible and practicable units due to the limitations in time, money and labour (Büyüköztürk & others, 2015). The study group consisted of 400 university students studying at a state university in Istanbul in the 2018-2019 academic year. Study group information have been shown in Table.1.

Table 1. The distribution of the students in the study group according to demographic variables

Description	f	%
Gender		
Female	152	38
Male	248	62
Total	400	100
Grade		
First-year	55	13,85
Second-year	71	16.15
Third-year	104	26
Fourth-year	172	43
Total	400	100
Department		
Mechanical Engineering	70	17.5
Management Engineering	50	12.5
Electrical Engineering	40	10
Naval Engineering	60	15
Computer Engineering	60	15
Textile Engineering	60	15
Astronautical Engineering	50	12.5
Total	400	100
Graduated High School Type		
Anatolian High School	226	56.5
Science High School	81	20.25
Social Sciences High School	2	0.5
Vocational and Technical Anatolian High School	10	2.5
Anatolia İmam Hatip High School	3	0.75
Private Foreign High School	7	1.75
Private High School	42	10.5
Other	7	0.75
Total	400	100
Region of the birth		
Mediterranean Region	54	13.5
South Anatolian Region	25	6.25
Marmara Region	170	42.5
Black Sea Region	36	9
Central Anatolia Region	57	14.25
South East Anatolia Region	11	2.75
Aegean Region	38	9.5
Other	9	2,05
Total	400	100
Number of siblings		
Single child	52	13,85
Two siblings	182	45.25
Three siblings	112	27,75
Four siblings	34	8.25
Five siblings	20	13,85
Five siblings above	52	13
Total	400	100
Perceived Income Level		

Low income	42	10.5
Middle income	298	74.5
High income	60	15
Total	400	100
Place of residence		
Government dorm	83	20.75
Private dormitory or apart	73	18.25
At home with friends	96	24
Alone in the house	40	10
Next to the family	108	27
Next to relatives	13	3.25
Total	400	100

The results in Table 1 indicate that participants 38% are female and 62% are male and 13,85% are at in first class, and 16,15% are at second class, 26% are at third class and 43% are at forth class. In addition to this, 17,5% of the participants are at mechanical engineering department, 12,5% are at management engineering department, 10% are at electrical engineering department, 10% are at naval engineering department, 15% are at computer engineering department, 15% are at textile engineering department and 12,5% are at astronautical engineering department. 56.5% of the participants are graduated from Anatolian High School, 20,25% are graduated from Science High School, 0,5% are graduated from Social Sciences High School, 2,5% are graduated from Vocational and Technical Anatolian High School, 0,75% are graduated from Anatolia İmam Hatip High School, 1,75% are graduated from Private Foreign High School, 10,5% are graduated from Private High School and lastly 0,75% are graduated from other schools. It is seen in the table that 13,5% the region of birth of participants are M*editerranean Region*, 6,25% the region of birth of participants are *South Anatolian Region*, 42,5% the region of birth of participants are *Marmara Region*, 9% the region of birth of participants are *Black Sea Region*, 14,25% the region of birth of participants are *Central Anatolia Region*, 2,75% the region of birth of participants are *South East Anatolia Region*, 9,5% the region of birth of participants are *Aegean Region*, 2,05% the region of birth of participants are o*ther region.*It is indicated in the table that participants 13,85% are single child, 42,25% are one of two siblings, 27,75% are one of three siblings, 8,25% are one of four siblings, 13,85% are one of five siblings, 13% are one of five siblings above and participants 10,5% have low income level, 74,5% have middle income level, 15% have high income level. Lastly the table shows us that place of residence of participants are 20,27% are government dorm, 18,27% are private dormitory or apart, 24% are at home with friends, 10% are alone in the house, 27% are next to the family, 3,25% are next to relatives.

The data of the study were collected through the Demographic Information Form, Mindful Attention Awareness Scale (MAAS) and Academic Procrastination Scale (APS). Information on these measuring instruments have been presented below.

Demographic Information Form

In the demographic information form, university students were asked questions about gender, grade, department, graduated high school types, perceived income level, birth region, number of siblings and place of residence.

Mindful Attention Awareness Scale (MAAS)

The original Mindful Attention and Awareness Scale consist of 15 items which are rated on a six-point Likert scale from 1 (almost always) to 6 (always never). The total score

of the MAAS is obtained by calculating the mean of the responses from the 15 items. Higher scores on the scale suggest higher levels of mindfulness. Good internal consistency was found for the original MAAS in a student sample (α=0.82, n=327) and a general adult sample (α=0.87, n=239). Test-retest reliability of the MAAS was also good (r=0.81; Brown and Ryan 2003). The adaptation of the scale to Turkish was done by Özyeşil, Arslan, Kesici & Deniz in 2011 (Özyeşil et al., 2011).

Academic Procrastination Scale(APS)

The Academic Procrastination Scale developed by Çakıcı (2003) was developed to determine the procrastination levels of students in academic areas such as preparing for examinations, preparing for exams and preparing projects. The scale is negative (2, 3, 5, 6, 8, 10, 12, 14, 15, 16, 18, 19) and 7 of them are positive (1, 4, 7, 9, 11, 13, 17). The highest score is 95 and the lowest score is 19. The high score obtained from the scale indicates that students exhibit academic procrastination behavior (Çakıcı, 2003). The Cronbach alpha reliability coefficient of the Academic Procrastination Scale was calculated as .92. In this context, the Cronbach alpha internal consistency coefficient was calculated as .89.

Data Analysis

IBM SPSS Statistics 25 program was used to analyse the data. One-way ANOVA and T-test were used for normal distribution data, Man Whitney U and Kruskal Wallis tests, which are nonparametric equivalents of these tests, were used for data with non-normal distribution. A significant difference was found in the results of the analyses, the effect values were calculated and interpreted. Pearson correlation test was used to determine the relationships between variables.

Findings

In this section, the findings of the research are presented in a certain order and tables according to the research questions and the results of the data are interpreted.

The findings of the first research question (What are the level of the mindfulness and academic procrastination behaviours of the university students?) have been shown below.

Table 2. The level of the mindfulness and academic procrastination behaviours of the university students

	N	$\bar{X}$	s	Minimum	Maximum
Students' mindfulness levels	400	55,89	10,82	30	85/90
Academic procrastination levels	400	55,91	10,29	22	93/95

The results in Table 2 indicate that the standard deviation of students' mindfulness levels is 10,82 and the average of the same variable is 55,89 (s= 10,82, $\bar{X}$=55,89). In addition to this result, the standard deviation of academic procrastination levels is 10,29 and the average of the same variable is 55,91 (s= 10,29, $\bar{X}$=55,91). It can be said that the results of two variables are so similar and approximately on average. The highest score of Students' mindfulness levels is 90 and the highest score of the study group is 85; the lowest score of the study group is 30. The highest score of students' mindfulness levels is 95 and the highest score of the study group is 93; the lowest score of the study group is 22.

The findings of the second research question (Do the university students' mindfulness

levels and academic procrastination behaviours differ in terms of gender, grade, department, graduated high school type, perceived income level, region of the birth, number of siblings and place of residence?) is given below.

Table 3. T-test scores students' mindfulness levels in terms of gender variable

Gender	N	$\bar{X}$	S	SD	T	P
Male	248	56.17	11.123	398	680	.346
Female	152	55.41	10.349			

As seen in Table 3 students' mindfulness levels do not differ significantly according to gender, t (398) = 680, p> .05.

Table 4. ANOVA scores students' mindfulness levels in terms of department variable

Intergroup	Sumof Squares	SD	Mean Square	F	p	Significant difference	η^2
Between groups	2963.49	6	493.91	4.429	.000	Computer Engineering- Astronautical Engineering	0.019
Within-group	43823.21	393	111.0			Mechanical Engineering- Astronautical Engineering	
Total	46786.71	399					

The results in Table 4 show that there is a significant difference in mindfulness levels in terms of students' departments F (6, 393) = 4.429, p <.05. According to the results of the Scheffe test conducted in order to find out the differences between the departments, the students in the department of computer engineering (X) = 57.68) and in the mechanical engineering department (X) = 59.46) were able to it was determined to be higher. In addition, electrical engineering (X = 56.78), naval engineering (X= 56.22), textile engineering (X= 55.80), engineering (X = 53.14) students' scores are higher than those of astronautical engineering students. The effect level for the ANOVA test is small ($\eta 2$ = 0.019).

Table 5. ANOVA scores students' mindfulness levels in terms of grade variable.

Intergroup	Sum of Squares	SD	Mean Square	F	P
Between groups	902.936	3	300.97	2.598	.052
Within-group	45883.774	396	115.86		
Total	46786.710	399			

As seen in Table 5, students' mindfulness levels do not show a significant difference in terms of their grades, F (3, 396) = 2.598, p> .05.

Table 6. ANOVA scores students' mindfulness levels in terms of graduated high school type variable

Intergroup	Sum of Squares	SD	Mean Square	F	P
Between groups	848.856	7	121.265	1.035	.406
Within-group	45937.854	392	117.188		
Total	46786.710	399			

According to the data in Table 6, students' mindfulness levels do not show a significant

difference in terms of their graduated high school type, F (7,392) = 1,035, p> .05.

Table 7. ANOVA scores students' mindfulness levels in terms of the region of the birth variable.

Intergroup	Sum of Squares	SD	Mean Square	F	P
Between groups	800.074	7	114.296	.974	.450
Within-group	45986.636	392	117.313		
Total	46786.710	399			

Table 7 results indicate that there is no significant difference in terms of the region of births of students' mindfulness levels, F (7,392) = 974, p> .05.

Table 8. ANOVA scores students' mindfulness levels in terms of number of siblings variable

Intergroup	Sum of Squares	SD	Mean Square	F	P
Between groups	169.059	4	42.265	.358	.838
Within-group	46617.651	395	118.019		
Total	46786.710	399			

Table 8 results show that students' mindfulness levels do not differ significantly in terms of the number of siblings, F (4,395) = .358, p> .05.

Table 9. ANOVA scores students' mindfulness levels in terms of perceived income level variable

Intergroup	Sum of Squares	SD	Mean Square	F	P
Between groups	241.122	2	120.561	1.028	.359
Within-group	46545.588	397	117.243		
Total	46786.710	399			

As seen in Table 9, students' mindfulness levels do not indicate a significant difference in terms of perceived income level, F (2,397) =. 1,028, p> .05.

Table 10. ANOVA scores of students' mindfulness levels in terms of place of residence variable

Intergroup	Sum of Squares	SD	Mean Square	F	P
Between groups	435.783	5	87.157	.741	.593
Within-group	46350.927	394	117.642		
Total	46786.710	399			

Table 10 results indicate that students' mindfulness levels do not differ significantly in terms of the place of residence, F (5.394) = 741. p> .05.

Table 11. Man Whitney U scores of students' academic procrastination behaviours' in terms of gender variable

Gender	N	Mean Rank	Rank Sum	U	p
Male	248	198.62	49258.50	18382.50	.678
Female	152	203.56	30941.50		

According to the data in Table 11 academic procrastination levels of students do not differ significantly in terms of gender. U = 18382.50. p> .05.

Table 12. Kruskal-Wallis results of academic procrastination behaviours in terms of department variable

Department	N	Mean Rank	SD	X^2	P
Mechanical Engineering	70	193.74	6	10.856	.093
Management Engineering	50	185.51			
Electrical Engineering	40	240.79			
Naval Engineering	60	177.39			
Computer Engineering	60	223.43			
Textile Engineering	70	199.50			
Astronautical Engineering	50	194.34			
Total	400				

As seen in Table 12, academic procrastination levels of students do not differ significantly in their department variable. X^2 (SD=6. n=400) =10.856. p>.05.

Table 13. Kruskal-Wallis results of academic procrastination behaviours in terms of grade variable

Grade	N	Mean Rank	SD	X^2	P
First year	50	211.99	3	1.987	.575
Second year	73	185.90			
Third year	105	197.74			
Fourth year	172	205.04			
Total	400				

The results of Table 13 do not indicate that there is a significant difference in academic procrastination levels in terms of students' grade variable. X^2 (SD = 3, n = 400) = 987. p> .05.

Table 14. Kruskal-Wallis results of academic procrastination behaviours in terms of graduated high school type variable

Graduated High School Type	N	Mean Rank	SD	X^2	P
Anatolian High School	222	204.16	7	6.867	.443
Science High School	82	192.77			
Social Sciences High School	2	236.00			
Vocational and Technical Anatolian High School	10	234.65			
Anatolian İmam Hatip High School	4	129.00			
Private Foreign High School	8	172.69			
Private High School	43	179.33			
Other	29	229.09			
Total	400				

According to the results of Table 14, academic procrastination levels do not show a significant difference in terms of the high school type of students. X^2 (SD = 7, n = 400) = 6.867. p> .05.

Table 15. Kruskal-Wallis results of academic procrastination behaviours in terms of region of the birth variable

Region of the Birth	N	Mean Rank	SD	X^2	P
Mediterranean Region	48	201.97	7	10.172	.179
South Anatolian Region	26	187.12			
Marmara Region	171	206.02			
Black Sea Region	37	221.14			
Central Anatolia Region	58	206.00			
South East Anatolia Region	11	199.14			
Aegean Region	40	150.44			
Other	9	230.39			
Total	400				

As seen in Table 15, academic procrastination levels do not show a significant difference in terms of the region of students' birth. X^2 (SD = 7, n = 400) = 10.172. p> .05.

Table 16. Kruskal-Wallis results of academic procrastination behaviours in terms of number of siblings variable

Number of siblings	N	Mean Rank	SD	X^2	P
Single child	52	187.50	4	1.947	.746
Two siblings	182	199.22			
Three siblings	112	202.35			
Four siblings	34	222.47			
Five siblings	20	198.25			
Five siblings above	52	187.50			
Total	400				

Table 16 data show that there is no significant difference in academic procrastination levels in terms of the number of siblings. X^2 (SD = 4, n = 400) = 1.947. p> .05.

Table 17. Kruskal-Wallis results of academic procrastination behaviours in terms of perceived income level variable

Perceived income level	N	Mean Rank	SD	X^2	P
Low income	41	183.39	2	2.355	.308
Middle income	299	199.28			
High income	60	218.29			
Total	400				

Table 17 does not show a significant difference in academic procrastination levels in terms of perceived income levels of students. X^2 (SD = 2, n = 400) = 2.355. p> .05.

Table 18. Kruskal-Wallis results of academic procrastination behaviours in terms of place of residence variable

Place of residence	N	Mean Rank	SD	X^2	P
Government dorm	66	209.83	5	3.345	.647
Private dormitory or apart	74	185.16			
At home with friends	97	192.62			
Alone in the house	41	198.52			
Next to the family	109	211.93			
Next to relatives	13	209.58			
Total	400				

As seen in Table 18, it does not show that there is a significant difference in academic procrastination levels in terms of the place where students reside X^2 (SD = 5 n = 400) = 3.345. p> .05.

The findings of the third research question (Is there a meaningful relationship between the students' mindfulness levels and academic procrastination behaviours?) is given below.

Table 19. Correlation results between mindfulness levels and academic procrastination behaviours

		Mindfulness	Academic Procrastination
Mindfulness	Spearman's rho	1,000	,220**
	Sig. (2-tailed)	.	,000
	N	400	400
Academic Procrastination	Spearman's rho	,220**	1,000
	Sig. (2-tailed)	,000	.
	N	400	400

** Correlation is significant at the 0.01 level (2-tailed).

As seen in Table 4 the relationship between mindfulness score academic procrastination scores is significant. Mindfulness and academic procrastination scores are positive in other words they are increasing and decreasing together. The positive-level relationship between mindfulness score and academic procrastination score is also low (r=-.220; p<.05).

Results and Discussion

According to the findings, students' mindfulness levels do not indicate a significant difference in terms of gender. Examining the relationship between gender variable and mindfulness, Isik et al., 2013; Özden et al., 2008; Arslan, 2002; Cengiz, 2015; Cengiz, Serdar & Konuk, 2016; Ahmadia et al., 2014, Özyeşil, 2011 studies are in parallel with the results of this study. In the research, there was no significant relationship between the students' mindfulness levels and grade they studied. Azak (2018) found similar results to research data. On the other hand, in Kocaarslan's study (2016), mindfulness level of students in 1st and 2nd grades were found to be lower than those of 3rd and 4th-grade students. The results of the analysis do not indicate that there is a significant difference between the students' mindfulness levels and the high school type. The results of the analysis do not indicate that there is a significant difference in the level of mindfulness of the region, which is the birthplace of students. Despite the negative data of this study, Azak (2018), Sundlinga et al. (2017) found that students' mindfulness levels were caused by interregional differences. This situation can be explained by the similarity of cultural characteristics of university students in our country as well as group size. According to the results of the research, students' mindfulness levels do not indicate a significant difference in terms of their number of siblings. These results are Özyeşil (2011) is similar to the results of his study. The results of the analysis do not indicate that there is a significant difference in the level of mindfulness among the students' perceived income levels. Different from this study, Kocaarslan (2016), Tuncer (2017), Azak (2018), İflazoğlu & Saban (2008) found that their mindfulness levels were significantly different depending on their socioeconomic status. The results of the study do not indicate that there is a significant difference between the students' mindfulness levels and the place of residence.

The results of the research indicate that there is a significant difference in the mindfulness levels of students in terms of the departments, and it is determined that the mindfulness levels of the students in the department of computer engineering and mechanical engineering are higher than the students in the astronautical engineering department. In addition, the scores of electrical engineering, naval engineering, textile engineering and management engineering students are higher than those of the aerospace engineering students. It is seen that the effect level is low for ANOVA difference test. Studies such as Özyeşil (2011), Kocaarslan (2016), Dubert et al. (2016), Howell et al. (2008), Ramli et al. (2018) are in parallel with the research findings. On the other hand, Tuncer (2017) found that there was no significant difference between the students' mindfulness levels and the departments they studied.

According to the results of the study, it does not indicate that there is a significant difference between academic procrastination behaviours in terms of gender, department, grade, graduated high school type, region of birth, number of siblings, perceived income levels and place of residence.

In addition to this, there is a significant relationship between university students' mindfulness levels and academic procrastination behaviours. Mindfulness and academic procrastination scores are positive (together with increasing and decreasing) and there is a low positive correlation between mindfulness score and academic procrastination score. However, Sirois and Tosti (2012) and Bedel (2017) found a high correlation in their research.

The aim of the study was to investigate the relationship between engineering students' mindfulness levels and academic procrastination behaviours. The findings of the first question of the study are that the mindfulness and academic procrastination level scores are close to each other. The second question of the study was to determine whether the level of mindfulness and academic procrastination behaviours of engineering students differed according to some variables. According to the findings, it was concluded that mindfulness levels differ significantly according to the departments of the students. However, there was no significant difference in mindfulness levels with other variables. Academic procrastination levels did not differ significantly with any variable.

The third question of the study was to find out whether there is a relationship between the mindfulness levels and academic procrastination behaviours of engineering students. As previously mentioned, according to the researches in field of mindfulness, it was observed that students with high mindfulness level are more successful than others. Students' success are mainly related to academic process. This makes the academic postponement also relevant to mindfulness awareness. The question is how much the two variables are related. This study allows us to see that the two variables are related at low level. Academic procrastination is not a desirable behavior in school processes. This behavior may become more manageable with the finding out the other behaviours to which it relates. Therefore, the researchers' expectation was that the two variables had a negative relationship. If this were possible, it could be inferred that academic procrastination could be reduced if the curriculum of universities were enriched to raise mindfulness in addition to focusing directly on unwanted academic procrastination behavior. However, the positive relationship between the two variables is surprising. This may also be due to the fact that we address academic tasks that are far from mindfulness, which includes concepts such as remembering, paying attention, on purpose, in the present moment.

Recommendations and Suggestions

Consequently, it was determined that the relationship between students' mindfulness levels and academic procrastination behaviours was significant. The reason for this is that individuals who are prone to academic procrastination may have more academic problems than others or may have different reasons. It may be useful to conduct qualitative research to determine the causes of this condition. However, as the mindfulness levels increases, academic procrastination behaviours increases, which means that there is a positive relationship between the two variables. If academic procrastination does not fulfil its responsibilities, it is not foreseen for individuals with high awareness to perform this behavior. This may be due to a positive combination of academic procrastination tasks. However, it may be possible to reveal the underlying conditions through scientific research. According to the findings, mindfulness levels of university students differ significantly according to departments. In the light of these findings, it is recommended that university administrators and faculty members direct studies to increase the mindfulness levels of students. Besides, university psychological counselling and guidance services should help students in this regard. In this study, academic procrastination behaviours of university students did not indicate significant differences according to independent variables. The researchers propose to conduct new research with different independent variables. When the related literature is examined, it is seen that there are relatively less studies in engineering education regarding mindfulness and academic procrastination variables compared to other disciplines. Based on the research data, it is recommended to design engineering curriculums that include a variety of learner-centered active learning methods and techniques that students can do with responsibility and engage actively in teaching to increase their mindfulness levels and ensure that they do not make academic procrastination. In addition, it is understood that the development of mindfulness and lack of academic procrastination will affect the quality of education and academic achievement of students. It is important that the content arrangement in the curricula is always in the best interest of the student considering the levels of mindfulness of the student and the academic procrastination behaviours, and ensuring that the regulations are in line with the students' future plans or expectations. Considering the relationship between students' mindfulness levels and academic procrastination behaviours, curriculum evaluation study, which is based on a scientique model, can be conducted. Experimental studies that will focus on mindfulness studies should investigate whether there is a change in academic processes, especially academic procrastination behavior.

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