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Examination of meaning in life, forgiveness flexibility, cognitive flexibility, and psychological symptoms in individuals doing sports and not doing sports in terms of various variables

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ABSTRACT

The aim of this study is to examine the meaning of life, forgiveness flexibility, cognitive flexibility and psychological symptoms in individuals who do sports and those who do not. The research was carried out using the "relational scanning model". The universe of the study was formed by the students studying at Sakarya Applied Sciences University Faculty of Sport Sciences and Sakarya University. The sample consists of 686 students, 306 females and 380 males, selected by simple random method from this population. The data collected in the study were analyzed using descriptive statistics, independent groups t-test, one-way analysis of variance and Pearson correlation analysis. As a result of the research, it was found that the total score of psychological symptoms differed significantly in the faculties of education according to the state of doing sports and the sports year. On the other hand, no significant difference was found in the sub-dimensions of flexibility for forgiveness and meaning of life. Finally, it was concluded that cognitive flexibility scores differ significantly in the faculties of education according to the state of doing sports and the sports year.

Keywords: Meaning of life, forgiveness flexibility, cognitive flexibility, psychological symptom, sports.

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INTRODUCTION

Human beings strive to find meanings about life within the process from birth to death. In this regard, the need for meaning is an essential factor for an individual to maintain his/her life in a healthy way. Otherwise, the inability to meet the need for meaning, which is a psychosocial requirement, can bring about many affective, spiritual, neurological and sociological problems. Steger et al. (2008) explained the meaning in life as a concept allowing the formation of emotions and focused on the fact that it is a natural part of life. From this perspective, the negative meaning that the individual attributes to his/her life can lead to the emergence of various mental problems. Allott (2004) linked the causes of mental health problems to the inability to meet basic human needs. Likewise, WHO (2007) explained mental problems as the emergence of mental, emotional, and behavioral changes that cause a person to feel bad and lose his/her functionality.

As the meaning attributed to life affects an individual's psychological health, it can also affect the healthy performance of cognitive functions from a neurological perspective. In this sense, individuals with various psychological problems may experience troubles in the performance of cognitive functions, such as evaluating events from various perspectives, making logical decisions by minimizing negative emotions in the face of

events experienced. As a matter of fact, having a flexible cognitive structure requires looking at affective, cognitive and behavioral alternatives and developing new ways for the solution of problems (Çelikkaleli, 2014). In this regard, various problems may arise in the interpersonal and social relations of individuals who do not have a flexible structure. Because of the fact that individuals who do not have a flexible structure make decisions in the face of adverse situations by minimizing the emotional aspect of events, that their emotional aspect is predominant, and that for this reason they are less forgiving towards the other person may lead that their social environment narrows and their interpersonal relationship deteriorates.

The ability of an individual to approach events and people within the framework of rationality by mitigating the bad aspects of events that have been experienced is the basis of cognitive flexibility. In this context, it is possible to argue that the individual should also have the forgiveness flexibility towards others. Thompson and Shahen (2001) stated that it is necessary to find alternative solutions to problems that have previously occurred in the process of forgiveness and to implement these solutions. It is, therefore, possible to say that forgiveness requires the ability to be flexible in minimizing the negative aspects of events by using a combination of cognitive, affective, and behavioral skills. In this context, it is possible to say that the concepts of forgiveness flexibility and cognitive flexibility are interrelated.

The positive effects of sports on human life in psychological, affective, sociological, physiological and neurological fields have been revealed by many studies. Considering the effects of sports on these fields, it is thought that the meaning in life can have a positive effect on forgiveness flexibility, cognitive flexibility, and psychological symptoms. The interaction of these fields with each other is an important factor in terms of being a healthy person. As a matter of fact, due to the deterioration that occurs in any field, other fields may be adversely affected. In this context, it can be said that the positive effects of sports on these fields are an important factor in becoming a healthy person in all respects.

When the effects of sports on human health are examined, it has been suggested that sports show improvement in mood through various physiological and biological mechanisms. These include causing the change in monoamine activity in the central nervous system (Dishman et al., 1997), reduced hypothalamic–pituitary–adrenocortical axis activity (Droste et al., 2003), increased beta-endorphin release (Thoren et al., 1990), and increased physical fitness (Blumenthal et al., 1999).

Individuals who engage in sports activities have the opportunity to express their feelings through movements. This allows the emptying of negative emotions such as anger, aggression, shyness, jealousy, and control of these emotions (Kuru, 2003). Considering the fact that forgiveness begins with unfair behaviors, aggression, anger, and insecurity, and then gains flexibility by controlling these emotions (Edwards, 2007), it is possible to say that emotional emptying has a significant effect on affective and cognitive functions. Again, when the concept of cognitive flexibility, which is the basis of executive functions, is considered, it can be argued that it is an important factor in ensuring the control of thoughts, actions and emotions, and can be gained more easily with sports. In light of this information, the purpose of this study is to determine the relationship between the meaning in life, forgiveness flexibility, cognitive flexibility and psychological symptoms in individuals, who do and do not engage in sports, and to examine these variables based on the independent variables.

MATERIALS AND METHODS

Research model

This research, which examines the relationship between the meaning in life, forgiveness flexibility, cognitive flexibility, and psychological symptoms of university students, is designed using the “relational screening model”. Relational screening models are the “research models that aim to determine the existence and/or level of co-variation between two or more variables” (Karasar, 2018, p. 114).

Population and sample of the study

The population of this study consists of students studying at the Faculty of Sports Sciences of Sakarya University of Applied Sciences and Sakarya University in the spring semester of the 2018 - 2019 academic year. The sample of the study is composed of 432 students from Sports science and 254 students from other faculties, who were selected from this population by using simple random sampling method and who voluntarily participated in the study. In the simple random sampling method, “all units in the population have an equal and independent chance of being selected for the sample. In other words, the probability of being selected of each individual is equal, and the selection of one individual does not affect the selection of other individuals” (Büyüköztürk et al., 2017: 88). The researcher's ability to easily reach the sample groups at two universities can be shown as the reason why this sample group was selected in the study.

Collection of data

The data of the study were collected from the students studying at the Faculty of Sports Sciences of Sakarya University of Applied Sciences and Sakarya University in the spring semester of the 2018 - 2019 academic year. The data were collected first from the students of the

faculty of sports sciences between February 12 and March 20, and then between April 3 and May 5 from the students studying at the faculties of Sakarya University. Before collecting the data, the courses of the students were followed up and the necessary permissions were obtained by informing the lecturer of each course in advance. After obtaining the necessary permissions, written and oral instructions were provided to the students before the course, so as not to interfere with the students' courses, and the purpose of the study was explained, and it was stated that this study was conducted for scientific purposes. After the explanations, it was confirmed that all the questions in the measurement tools were understood by the students. A total of 747 data were collected from the students, but missing and incorrectly encoded data in 61 of them were excluded from the study. The study was conducted with the remaining 686 data. The principle of voluntary participation was taken into consideration while collecting the data.

Data collection tools

"Personal Information Form", "Meaning in Life Scale", "Cognitive Flexibility Scale", "Forgiveness Flexibility Scale" and "Psychological Symptom Screening List (Scl 90-R)" were used in the scope of the study. Detailed information about measurement tools are provided below:

Personal information form

A personal information form created by the researcher was used to determine some demographic characteristics of the students. In this form, it is aimed to obtain information, such as the faculty, the status of engagement in sports, and the number of years of sports.

Meaning in life scale

In the study, the "Meaning in Life" Scale was used to determine the meaning that the students attribute to life. The scale was developed by Steger et al. (2006), and the Turkish adaptation of which was made by Demirdağ and Kalafat (2015). 9 items of the scale are positive items (Items 1, 2, 3, 4, 5, 6, 7, 8 and 10) while 1 of it is a negative item (Item 9). The scale consists of two subscales as existing meaning (Items 1, 4, 5, 6 and 9) and the search for meaning in life (Items 2, 3, 7, 8 and 10). The score to be obtained from the scale ranges from 7 to 70. The highest score obtained from the scale indicates that the individual has a high level of having meaning in life. After the adaptation of the scale to Turkish, the Cronbach Alpha coefficient was found to be .81 for the subscale of existing meaning and .85 for the subscale of the search for meaning in life (Demirdağ and Kalafat, 2015). As a result of the study, the Cronbach Alpha coefficient was determined to be .77 for the subscale of existing meaning and the Cronbach Alpha coefficient was determined to be .82 for the subscale of the search for meaning in life.

Cognitive flexibility scale

The "Cognitive Flexibility" scale developed by Bilgin (2009) was used to determine the level of cognitive flexibility of the students. The questionnaire consists of 19 items. Questionnaire items consist of adjective pairs (e.g., "I can, I cannot", "I am successful, I am unsuccessful"). The lowest score can be obtained from the scale is 21 and the highest score is 105. The increase in the scores obtained from the scale suggests that the individual is getting closer to cognitive flexibility. In reliability studies on the scale, the Cronbach Alpha coefficient found for the entire questionnaire to be .92 (Bilgin, 2009). As a result of the study, the Cronbach Alpha coefficient of the measurement tool is found to be .93.

Forgiveness flexibility scale

The "Forgiveness Flexibility Scale" developed by Çolak (2014) was used to determine the level of forgiveness flexibility of the students. The scale consists of 15 items and 3 sub-scales. The scale is of quintet Likert type. The scale consists of 3 sub-scales: Recognition (1, 5, 8, 12), Internalization (2, 3, 6, 7, 14), and Practice (4, 9, 10, 11, 13, 15). It can be stated that the individual's level of forgiveness flexibility is high when high scores are obtained from the recognition, internalization, and practice subscales, respectively, on the scale. The highest score that can be taken from the scale is 75 and the lowest score is 15. The items in the recognition subscale are scored in reverse. In the study conducted by the researcher, the Cronbach Alpha coefficient of the scale was found to be .83 for the whole scale, .76 for the "Recognition" subscale, .70 for the "Internalization" subscale, and .70 for the "Practice" subscale (Çolak, 2015). As a result of the current study, the Cronbach Alpha coefficient of the measurement tool was determined as .76 for the "Recognition" subscale, .72 for the "Internalization" subscale, and .68 for the "Practice" subscale.

Psychological symptom screening list (Scl 90-R)

SCL 90-R "psychiatric symptom screening tool" used in the study was developed by Derogatis et al. (1973) to detect psychological symptoms found in normal-looking

people and evaluate changes in symptom level. SCL 90-R is a measurement tool that reveals in which areas and at what level psychological symptoms are found in individuals. The Turkish adaptation of the scale was made by Dağ in 1991. The scale is of the quintet Likert type and consists of 10 subscales answered between "none" and "very often" and 90 questions in total. These subscales are in the areas of: 1) Somatization 2) Obsessive-Compulsive 3) Interpersonal Sensitivity, 4) Depression, 5) Anxiety, 6) Anger and Hostility, 7) Phobic Anxiety, 8) Paranoid Ideation 9) Psychotic 10) Additional items (reflect the symptoms related to sleep disorders, appetite disorders, guiltiness). The subscales of the scale and the items of these subscales are as follows. 1) Somatization reflects the items "1, 4, 12, 27, 40, 42, 48, 49, 52, 53, 56, 58" 2) Obsessive-Compulsive Disorder reflects the items "3, 9, 10, 28, 38, 45, 46, 51, 55, 65" 3) Interpersonal Sensitivity reflects the items "6, 21, 34, 36, 37, 41, 61, 69, 73" 4) Depression reflects the items "5, 14, 15, 20, 22, 26, 29, 30, 31, 32, 54, 71, 79" 5) Anxiety reflects the items "2, 17, 23, 33, 39, 57, 72, 78, 80, 86" 6) Anger and Hostility reflects the items "11, 24, 63, 67, 74, 81" 7) Phobic Anxiety reflects the items "13, 25, 47, 50, 70, 75, 82", 8) Paranoid Ideation reflects the items "8, 18, 43, 68, 76, 83" 9) Psychotic reflects the items "7, 16, 35, 62, 77, 84, 85, 87, 88, 90" 10) Additional Items (Sleep and Appetite disorders, Guiltiness) reflects the items "19, 44, 59, 60, 64, 66, 89".

As a result of the current study, the Cronbach Alpha coefficient of the measurement tool was found in respect of the subscales to be .85 for Somatization; .78 for Obsessive-Compulsive; .83 for Interpersonal Sensitivity; .88 for Depression; .85 for Anxiety; .78 for Hostility (Anger and Hostility); 73 for Phobic Anxiety; 69 for Paranoid Ideation; .81 for Psychoticism; .64 for Additional items (sleep disorder, guiltiness), respectively.

Analysis of the data

To avoid possible incorrect coding and the data of missing response, the data collected from the students were individually checked, encoded, and transferred into the SPSS 21.0 package program. Before deciding on statistical analyses to be performed on the data, the data were tested for normality. In the normality test, the skewness and kurtosis values of the data were examined. As a result of the statistical analysis, the data were determined within the range of -2>....<+2. These determined values can be considered corresponding to the normal distribution (George and Mallery, 2001, pp. 86-87). Parametric tests were preferred because the data showed normal distribution. Descriptive statistics, independent groups' t-test, one-way variance analysis (one way-ANOVA), Pos Hoc (TUKEY) test, a test from multiple comparison tests, were used to analyze the data in general, and Pearson correlation analysis was used to determine the relationship between dependent groups.

RESULTS

The results according to the variable of the faculty attended are shown in Tables 1 and 2. The results according to the sport year are shown in Tables 3 and 4. The relationship results between psychological symptoms, forgiveness flexibility, meaning of life and cognitive flexibility are shown in Table 5.

When Table 1 is examined, "independent groups' t-test" comparison results of psychological symptom score averages of the faculty of sports sciences and other faculties based on the status of engaging in sports is seen. According to the results, while significant differences were found in obsessive-compulsive, interpersonal sensitivity, and depression subscales in the faculty of sports sciences ($p < .05$), no significant differences were found in other faculties ($p > .05$). In sports science, those who do not engage in sports have significantly higher obsessive-compulsive, interpersonal sensitivity, and depression subscale scores.

Table 1. T-test comparison results of psychological symptom score averages of the Faculty of sports sciences and other faculties based on the status of engaging in sports.

Faculty	Variables	Status of engagement in sports	n	$\overline{X}$	ss	t	p
Faculty of Sports Sciences	Somatization	Yes	360	.91	.62	.07	.94
		No	72	.91	.55		
	Obsessive-compulsive	Yes	360	1.28	.62	-2.06	.04
		No	72	1.45	.64		
	Interpersonal sensitivity	Yes	360	1.04	.71	-2.52	.01
		No	72	1.27	.71		

Table 1. Continues.

	Depression	Yes	360	1.03	.69	-2.19	.02
		No	72	1.22	.72		
	Anxiety	Yes	360	.82	.66	-1.30	.19
		No	72	.93	.62		
	Hostility (anger and hostility)	Yes	360	1.07	.83	.03	.97
		No	72	1.07	.78		
	Phobic anxiety	Yes	360	.62	.63	.52	.59
		No	72	.58	.57		
	Paranoid ideation	Yes	360	1.11	.70	-1.82	.06
		No	72	1.28	.71		
	Psychoticism	Yes	360	.76	.62	.28	.77
		No	72	.78	.60		
	Additional items (sleep disorder, guiltiness)	Yes	360	1.21	.71	-1.30	.19
		No	72	1.33	.69		
	(SCL-90) Scale Total	Yes	360	.98	.57	-1.34	.17
		No	72	1.08	.54		
Other Faculties	Somatization	Yes	34	.95	.73	-1.24	.21
		No	220	1.12	.71		
	Obsessive-compulsive	Yes	34	1.39	.79	-1.55	.12
		No	220	1.60	.69		
	Interpersonal sensitivity	Yes	34	1.16	.82	-1.85	.06
		No	220	1.42	.75		
	Depression	Yes	34	1.20	88	-1.90	.06
		No	220	1.47	.75		
	Anxiety	Yes	34	.97	.82	.57	.56
		No	220	1.05	.74		
	Hostility (Anger and Hostility)	Yes	34	1.23	.97	.98	.32
		No	220	1.08	.81		
	Phobic anxiety	Yes	34	.73	.72	.39	.69
		No	220	.78	.68		
	Paranoid ideation	Yes	34	1.16	.78	.96	.33
		No	220	1.29	.77		
	Psychoticism	Yes	34	.91	.74	.19	.84
		No	220	.93	.71		
	Additional items (sleep disorder, guiltiness)	Yes	34	1.24	.78	.69	.48
		No	220	1.33	.71		
	(SCL-90) Scale Total	Yes	34	1.09	.69	.98	.32
		No	220	1.21	.61		

When Table 2 is examined, “independent groups’ t-test” comparison results of the score averages of forgiveness flexibility, meaning in life, and cognitive flexibility of the faculty of sports sciences and other faculties based on the status of engaging in sports is seen. According to the results, while significant differences were found only in cognitive flexibility scores in sports science ($p < .05$); no significant differences were found in all variables in other faculties ($p > .05$). In sports science, the average score of those who engage in sports in cognitive flexibility is significantly higher.

Table 2. T-test comparison results of the score averages of forgiveness flexibility, meaning in life, and cognitive flexibility of the faculty of sports sciences and other faculties based on the status of engaging in sports.

Faculty	Variables	Status of engagement in sports	n	x	ss	t	p
Faculty of Sports Sciences	Recognition	Yes	360	2.18	.91	.12	.90
		No	72	2.17	.92		
	Internalization	Yes	360	3.48	.77	.42	.67
		No	72	3.44	.79		
	Implementation	Yes	360	3.50	.71	.05	.96
		No	72	3.50	.78		
	Existing meaning in life	Yes	360	2.79	1.23	.64	.51
		No	72	2.89	1.09		
	Search for meaning in life	Yes	360	2.84	1.23	1.14	.25
		No	72	2.66	1.17		
	Cognitive Flexibility	Yes	360	79.34	13.28	3.85	.00
		No	72	72.33	17.60		
Other Faculties	Recognition	Yes	34	2.07	.82	-1.03	.30
		No	220	2.24	.90		
	Internalization	Yes	34	3.59	.77	.51	.61
		No	220	3.65	.62		
	Implementation	Yes	34	3.49	.63	.61	.54
		No	220	3.42	.60		
	Existing meaning in life	Yes	34	3.04	1.13	.64	.52
		No	220	3.16	1.09		
	Search for meaning in life	Yes	34	2.65	1.14	.15	.87
		No	220	2.68	1.13		
	Cognitive Flexibility	Yes	34	70.76	18.16	.53	.59
		No	220	72.13	13.03		

In Table 3, the results of the one-way analysis of variance (ANOVA) used to compare the students' psychological symptoms subscale and total scores based on the number of years on the engagement in sports are seen. The results indicate that the subscale score averages of somatization, obsessive-compulsive, interpersonal sensitivity, and depression differ significantly based on the number of years of engagement in sports ($p < .05$). According to the Post

Hoc (LSD) results conducted to determine the source of the difference; the score averages of the students engaging in sports between 1 and 5 years were found higher ($p < .05$) than of the students engaging in sports 11 years and above in obsessive-compulsive disorder subscale; the students engaging in sports between 1 and 5 years than the students engaging in sports between 6-10 years and 11 and above in interpersonal sensitivity subscale; the students engaging in sports between 1 and 5 years than the students engaging in sports between 6 and 10 years and 11 and above in depression subscale. On the other hand, no significant differences were found in the total score averages of somatization, anxiety, hostility (anger and hostility), phobic anxiety, paranoid ideation, psychoticism, additional items (loss of appetite, sleep disorder, guiltiness) ($p > .05$).

Table 3. One-way analysis of variance (ANOVA) comparison results of psychological symptom score averages of students based on the number of years of engagement in sports.

Subscales	Years of engagement in sports	n	$\overline{X}$	SS	F	p	LSD
Somatization	1-5 years	170	.95	.64	.74	.47	
	6-10 years	155	.86	.60			
	11+	69	.90	.65			
Obsessive-compulsive disorder	1-5 years[a]	170	1.36	.66	3.56	.02	a>c
	6-10 years[b]	155	1.28	.61			
	11+[c]	69	1.12	.60			
Interpersonal sensitivity	1-5 years[a]	170	1.16	.69	4.07	.01	a>b a>c
	6-10 years[b]	155	.97	.71			
	11+[c]	69	.92	.74			
Depression	1-5 years[a]	170	1.14	.71	3.04	.04	a>b a>c
	6-10 years[b]	155	.97	.69			
	11+[c]	69	.93	.71			
Anxiety	1-5 years	170	.91	.67	1.99	.13	
	6-10 years	155	.78	.65			
	11+	69	.75	.68			
Hostility (anger and hostility)	1-5 years	170	1.15	.83	1.28	.27	
	6-10 years	155	1.04	.86			
	11+	69	.98	.81			
Phobic anxiety	1-5 years	170	.68	.65	1.22	.29	
	6-10 years	155	.60	.62			
	11+	69	.55	.63			
Paranoid ideation	1-5 years	170	1.15	.69	.45	.63	
	6-10 years	155	1.08	.72			
	11+	69	1.07	.72			
Psychoticism	1-5 years	170	.81	.60	.83	.43	
	6-10 years	155	.72	.61			
	11+	69	.75	.71			
Additional items (loss of appetite, sleep disorder, guiltiness)	1-5 years	170	1.28	.76	1.38	.25	
	6-10 years	155	1.16	.69			
	11+	69	1.15	.63			
Psychological symptom Total score	1-5 years	170	1.06	.56	2.22	.10	
	6-10 years	155	.95	.58			
	11+	69	.91	.59			

In Table 4, the results of the one-way analysis of variance (ANOVA) used to compare the students' total score averages of forgiveness flexibility subscales, meaning in life subscales, and cognitive flexibility based on the number of years on the engagement in mean sports are seen. The results indicate that the average cognitive flexibility score differs significantly based on the number of years in the engagement in sports ($p < .05$). According to the Post Hoc (LSD) results conducted to determine the source of the difference; it was found that the average cognitive flexibility scores of the students who have engagement in sports between 6 and 10 years and 11 years and above were higher than that of the students who have engagement in sports between 1 and 5 years ($p < .05$). On the other hand, no significant differences were found in recognition, internalization, practice, existing meaning in life, and search for meaning in life subscales ($p > .05$).

Table 4. One-way analysis of variance (ANOVA) comparison results of the score averages of forgiveness flexibility, meaning in life, and cognitive flexibility of the students based on years of engagement in sports.

Subscales	Years of engagement in sports	n	$\overline{X}$	SS	F	p	LSD
Recognition	1-5 years	170	2.09	.82	2.10	.12	
	6-10 years	155	2.29	.99			
	11+	69	2.10	.88			
Internalization	1-5 years	170	3.57	.76	1.78	.17	
	6-10 years	155	3.43	.73			
	11+	69	3.40	.81			
Implementation	1-5 years	170	3.51	.68	.17	.84	
	6-10 years	155	3.47	.72			
	11+	69	3.51	.71			
Existing meaning in life	1-5 years	170	2.91	1.20	1.07	.34	
	6-10 years	155	2.73	1.20			
	11+	69	2.73	1.32			
Search for meaning in life	1-5 years	170	2.79	1.16	.46	.62	
	6-10 years	155	2.80	1.26			
	11+	69	2.95	1.29			
Cognitive flexibility	1-5 year[a]	170	76.36	14.78	3.953	.020	b>a c>a
	6-10 year[b]	155	80.05	12.98			
	11+[c]	69	80.81	13.32			

In Table 5, the results of the Pearson correlation analysis among the psychological symptom, forgiveness flexibility subscales, meaning in life subscales, and cognitive flexibility score averages are seen. The results showed psychological symptom has a significant relationship with recognition subscales ($r = .33$) at moderate level in positive direction and with practice subscales ($r = -.22$) at low level in negative direction; with existing meaning in life ($r = .30$) at moderate level in positive direction, and with cognitive flexibility ($r = -.39$) at moderate level in negative direction. Of the forgiveness flexibility subscales, recognition subscale has significant relationships with existing meaning in life ($r = 19$) at low level in positive direction, with cognitive flexibility ($r = -16$) at low level in negative direction; internalization subscale with existing meaning in life ($r = -22$) and search for meaning in life ($r = -12$) at low level in negative direction, with cognitive flexibility ($r = 13$) at low level in positive direction; practice subscale with existing meaning in life ($r = -26$) and search for meaning in life ($r = -10$) at low level in positive direction, with cognitive flexibility ($r = 24$) at low level in positive direction. Finally, significant relationships were found between existing meaning and cognitive flexibility ($r = -.36$) at moderate level in negative direction; and between search for meaning in life and cognitive flexibility ($r = -.08$) at low level in negative direction.

Table 5. The results of the relationship between the students' scores of psychological symptoms, forgiveness flexibility, the meaning of life, and cognitive flexibility.

		1	2	3	4	5	6	7
1) Psychological symptom	r	1						
2) Recognition	r	.33**	1					
3) Internalization	r	.05	-.40**	1				
4) Practice	r	-.22**	-.28**	.63**	1			
5) Existing meaning in life	r	.30**	.19**	-.22**	-.26**	1		
6) Search for meaning in life	r	.03	.02	-.12**	-.10**	.23**	1	
7) Cognitive flexibility	r	-.39**	-.16**	.13**	.24**	-.36**	-.08*	1

$p < .05$*, $p < .01$**.

DISCUSSION

The current study is based on the personal characteristics of university students studying at the faculty of sports sciences and other faculties. Considering the independent variables, which are the subject of the examination of the study, namely faculty, engagement in sports, and year of engagement in sports, it is aimed to discuss the results of the meaning in life, cognitive flexibility, forgiveness flexibility, and psychological symptoms of the students and the relationships between dependent variables.

In psychological symptom comparison results based on engagement in sports of the faculty of sports sciences and other faculties, the obsessive-compulsive, interpersonal sensitivity and depression scores of those who engage in sports at the faculty of sports sciences are significantly higher than those who do not engage in sports ($p < .05$). On the other hand, no significant differences were found in somatization, anxiety, anger and hostility, phobic anxiety, paranoid ideation, psychoticism, additional items, and total scale scores ($p > .05$). In other faculties, no significant differences were found in all subscales of psychological symptoms based on the engagement in sports ($p > .05$). As for the result achieved, it can be said that these symptoms are less common in individuals who engage in sports at the faculty of sports sciences. Because the student profile of the faculty of sports sciences is composed of students who are professionally engaged in sports or who have been interested in sports for many years. In this regard, given that sports enable emptying of negative emotions and provide an opportunity for individuals to express their emotions, it can be said that these symptoms are less common in students who engage in sports at the faculty of sports sciences. When similar studies are considered, Sütpak (2012) found that the average severity of psychological symptoms is the highest in students studying in sports high school and the lowest in students studying in Anadolu high school. But he concluded that there was no significant relationship in respect of psychological symptoms and the type of secondary school. Again, Yıldırım (2016) found that there were no significant differences in scales of anxiety, depression, negative self, somatization, and anger and hostility according to the type of school.

No significant differences in variables of forgiveness flexibility and meaning in life were found in the faculty of sports sciences based on engagement in sports in comparison results of the average scores of forgiveness flexibility, meaning in life, and cognitive flexibility of the faculty of sports sciences and other faculties ($p > .05$). On the other hand, in the faculty of sports sciences, the cognitive flexibility levels of the students who engage in sports are significantly higher than those who do not engage in sports ($p < .05$). It is concluded that there are no significant differences in forgiveness flexibility, meaning in life, and cognitive flexibility variables of other faculties based on the engagement in sports ($p >.05$). Regarding the result achieved, professional engagement in or special affinity with sports for many years of the students at the faculty of sports science and in this context, their increased levels of cognitive flexibility due to their increased levels of serotonin and dopamine neurotransmitters by engagement in sports can be shown as the reason for a significantly high level of cognitive flexibility of students at the faculty of sports sciences engaging in sports. Similar to the result achieved, Kaptanbaş Gürbüz and Sezgin Nartgün (2018) conclude that the cognitive flexibility levels of teacher candidates who are or will be graduated from the faculty of fine arts and the high school of physical education and sports are higher than those of teacher candidates in other departments. Esen Aygun (2018) found in his study that there are no significant differences in the level of cognitive flexibility of teacher candidates based on the department variable.

It is concluded that there is a significant difference in psychological symptom, obsessive-compulsive disorder, interpersonal sensitivity, and depression scales based on the variable of the number of years of engagement in sports of the students ($p < .05$). On the other hand, it was determined that there was no significant difference in average scores of somatization, anxiety, anger and hostility, phobic anxiety, paranoid ideation, psychoticism, additional items (loss of appetite, sleep disorder,

guiltiness), and psychological symptom ($p > .05$). As for the result achieved, it is observed that as the number of years of engagement in sports increases the averages of the scores decrease in obsessive-compulsive disorder, interpersonal sensitivity, and depression scales. In other words, as the number of years of engagement in sports increases these symptoms decrease. As for the result, sports and exercise increase the level of serotonin and dopamine, which are called neurotransmitters. These neurotransmitters are important preservatives in improving human mental health and developing mental health problems. Serotonin, produced with long-term cardio exercises, reduces depression and hostility and improves social behavior (Terlemez, 2019). From this point of view, as the period of engagement in sports of the individual increases, the release of neurotransmitters continues, and there may be a decrease in these symptoms. When the studies that are similar to the results achieved are considered, Başar (2018) found that there is a significant difference in depression, happiness, and psychological well-being scores of people who regularly engage in sports compared to those who do not engage in sports. No results have been found in the literature regarding the obsessive-compulsive disorder and interpersonal sensitivity based on the duration of the engagement in sports. Abrantes et al. (2009) found that the changes in the size of exercise's effect on reducing negative mood and anxiety were quite constant, while self-reported levels of obsession and compulsion decreased during the intervention period. They also stated that the effect of exercise was great for reducing acute symptoms in patients with obsessive-compulsive disorder. Bingkun and Qian (1997) concluded that individuals who actively participated in sports dances had lower levels of interpersonal sensitivity and depression than normal people.

Different from the result achieved, Sürpak (2012) concluded that there was no significant relationship between active sports history and somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, phobic anxiety, psychoticism, and additional items symptom. Again, Dalmaz and Yurtdaş (2015) found that individuals who regularly engage in sports show higher orthorectic tendencies than those who do not engage in sports.

It was found that there were no significant differences in the scales of forgiveness flexibility, recognition, internalization, and practice of students based on the number of years of engagement in sports ($p > .05$). As for the result achieved, it can be stated that the concept of forgiveness flexibility, which includes cognitive, affective, and behavioral processes, can be gained by considering experiences and internal resources, and this is not directly related to the number of years of the engagement in sports. No studies have been found in the literature examining the forgiveness flexibility according to the variable of the number of years of engagement in sports. When similar studies are considered, Güllü (2018) concluded in his study that there were significant differences in subscales of sportsmanship orientation level, compliance with social norms, respect for rules and management, and respect for the competitor based on the duration of the engagement in sports of the participants. In another study, Güllü and Şahin (2017) found that there was a significant difference in the concept of organizational revenge of physical education and sports teachers based on the length of time they worked in the institution.

It was concluded that there were no significant differences in the subscales of the meaning in life and the scales of existing meaning in life and search for meaning in life based on the variable of the number of years of engagement in sports ($p > .05$). On the other hand, as the number of years of engagement in sports increases, a rise in the average scores of the search for meaning in life is seen. As for the result achieved, Klinger (1977) listed characteristics such as personal development, interpersonal relationships, success, and leaving traces in life as the basis of the meaning of life (cited by Prager, 1997). As can be understood, the meaning in life is related to the goals set and whether these goals are realized or not. In this case, it is possible to talk about sports. This is because there are goals in sports that require continuity. In order to achieve the goals set, it is necessary to train regularly. Sportsperson makes the same preparation for each competition. In this case, there is a new goal set for each competition. From that point, as the number of years of engagement in sports increases, there may be an increase in the score of search for meaning in life. No studies have been found in the literature examining the meaning in life on the basis of the number of years of engagement in sports. Baytan (2019) found that there was no significant differentiation in the levels of existing meaning in life and search for meaning in life of the managers on the basis of their duration of work. In another study, Taş (2011) found that there was no significant difference in the scales of existing meaning in life and search for meaning in life of the teachers on the basis of their duration of work. In a different study, Eren (2008) concluded that the average life satisfaction score of individuals with 16 years and more of professional experience was significantly higher compared to other groups.

It was concluded that there was a significant difference in the average score of cognitive flexibility based on the number of years of engagement in sports ($p < .05$). According to the result, as the number of years of engagement in sports increases, the level of cognitive flexibility increases. As for the result, it is known that exercise increases the level of dopamine and serotonin. Serotonin plays an active role in regulating decision-making functions associated with the ventromedial and orbital areas of the frontal cortex. This task of serotonin is especially more effective in the decision-making process

as to which might be the best outcome (Irak, 2012). Looking at the task of dopamine, it has been suggested that the mesocorticolimbic dopamine system has an important role in situations requiring cognitive flexibility in reward-related learning and in adapting behavior to new conditions (Clarke et al., 2004; Schultz, 2002). In this regard, it can be said that as the duration of engagement in sports increases, the increase in serotonin and dopamine continues, and therefore the level of cognitive flexibility increases. There are a limited number of studies that examine the level of cognitive flexibility on the basis of the number of years of the engagement in sports variable. Different from the results achieved, Yavuz (2019) concluded that the levels of cognitive flexibility and psychological robustness of sportspersons with disabilities do not have a significant relationship with sports age. In a study conducted in a different area, Başsu (2016) found that there was no significant difference in students' cognitive flexibility scores on the basis of seniority years of teachers.

As a result of an analysis conducted to determine the relationship between students' scores for the psychological symptom, forgiveness flexibility, meaning in life, and cognitive flexibility, it was concluded that there was a positive relationship between the level of psychological symptom and forgiveness flexibility recognition scale and a negative relationship in the practice scale. According to the conclusion reached, as the psychological symptom increases, an increase in recognition of forgiveness is observed. Recognition of forgiveness may differ from person to person in relation to the person's process of meaning-making. In order to forgive, one must first know what forgiveness means. In this regard, it can be said that individuals whose health deteriorates psychologically develop more thoughts about forgiveness and question forgiveness as a result of the negative experiences they had. In this regard, it can be said that there is a positive relationship between the psychological problems of individuals and the scale of recognition of forgiveness.

As the reason for a negative relationship between the psychological symptom and the practice scale, it can be shown that individuals with impaired psychological health develop thoughts about the concept of forgiveness, question the concept of forgiveness, but when they regard their internal dynamics, they cannot practice forgiveness. In other words, bad experiences the individuals had can affect decision-making processes by minimizing the negative aspects of events. As for the results reached, no findings have been found in the literature. When similar studies are considered, Yaşar (2015) found that there is a positive relationship between subjective well-being, psychological robustness, and forgiveness in his study. In another study, Tura (2019) found that psychological well-being had a positive relationship with general forgiveness and optimism, and a negative relationship with the scales of retribution and distancing.

It has been found that there is a positive relationship between psychological symptom and scale of existing meaning in life, which is the subscale of meaning in life. In other words, as the psychological symptom increases, the existing meaning in life increases. According to the conclusion, lack of psychological health can cause a person to develop positive thoughts about the existing situation due to a low level of awareness of his/her future expectation. In the examination of the literature, no study examining the relationship between the meaning in life and the psychological symptom was found. When similar studies are considered, Avşaroğlu and Okutan (2018) have concluded that there was a negative relationship between psychological symptom and life satisfaction. In another study, Alver et al. (2016) concluded that there were significant differences between those who perceived themselves hopeful and those who perceived themselves non-hopeful and partially hopeful in all of the psychological symptoms based on students' perceptions of hopefulness for the future.

It was found that there was a negative relationship between psychological symptom and cognitive flexibility. In other words, as the psychological symptom increases, the level of cognitive flexibility decreases. As for the result, the individuals, whose psychological health is poor, who are unable to think healthily, are likely to be unable to operate their cognitive functions in a healthy way. Indeed, cognitive flexibility works in conjunction with the brain's decision-making mechanism. For this reason, the inability of persons with mental health disorders to make healthy decisions may affect cognitive flexibility level. No parallel studies with the results obtained were found in the literature. When similar studies are considered, Murphy (2015) found that people who experience high and low levels of depression used similar emotion-regulation strategies and had similar levels of cognitive flexibility. In another study, Küçüker (2016) concluded that there was a positive significant relationship between cognitive flexibility and compatible emotion regulation strategies, while there is a negative significant relationship between cognitive flexibility and incompatible emotion regulation strategies.

It has been found that there was a positive relationship between the recognition subscale of forgiveness flexibility and the existing meaning in life subscale of meaning in life. According to the result, as recognition increases, the existing meaning in life also increases. As the reason for the increase in the existing meaning in life as recognition increases, it can be expressed that the individual's positive thoughts about the concept of forgiveness recognize forgiveness and, in relation to this, that existing meaning in life of the individual can be approached from a more positive perspective. As for the results reached, no findings have been found in the literature. Looking at similar studies, Canatan et al. (2015) found that there were positive relationships between forgiveness and

meaning in life.

It was concluded that there was a negative relationship between the recognition subscale of forgiveness flexibility and cognitive flexibility. In other words, as recognition increases, the level of cognitive flexibility decreases. As for the result, the thoughts an individual develops regarding recognizing forgiveness can negatively affect cognitive flexibility. No studies examining the relationship between recognition and cognitive flexibility were found in the literature. Looking at similar studies, Hodgson and Wertheim (2007) concluded that the scale of ability to look from different perspective of cognitive flexibility mediates in the relationship between emotion regulation and forgiving others.

It was found that there was a negative relationship between internalization subscale of forgiveness flexibility and existing meaning in life and search for meaning in life. According to the result, as internalization increases, existing meaning in life and search for meaning in life decreases. Internalization means that a person embraces values and rules related to the culture to which he/she belongs, mingling in his/her own personality. In this sense, an increase in the level of internalization of an individual can sometimes lead to negative situations. For example, an increase in the level of internalization can lead to the suppression of certain emotions, and this can affect existing meaning in life and search for meaning in life negatively. No other study in parallel with the results reached was found in the literature. Looking at similar studies, Van Tongeren et al. (2015) concluded that meaning in life of the individuals who regularly forgive their spouses increases regularly over time. They also made an explanation that forgiveness is a mechanism that adds meaning.

It was determined that there was a positive relationship between internalization subscale and cognitive flexibility. In other words, as internalization increases, the level of cognitive flexibility also increases. Reviewing the studies in the literature, Katovsich (2007) concluded that the components of forgiveness predict interpersonal cognitive flexibility.

It was found that there is a negative relationship between the practice subscale of forgiveness flexibility and existing meaning in life and search for meaning in life. In other words, as practice increases, existing meaning in life and search for meaning in life decreases. The increase in the practice of forgiveness means that the individual decides to forgive, minimizing the negative aspects of events. Therefore this can in some sense lead to the suppression of emotions. In this context, the levels of existing meaning in life and search for meaning in life of a person who suppresses his/her emotions can be in negative direction. No study examining the relationship between practice subscale and existing meaning in life and search for meaning in life was found in the literature. Examining similar studies, Hantman and Cohen (2010) concluded in their study that all scales of the meaning in life are related to forgiveness.

It was concluded that there was a positive relationship between practice subscale and cognitive flexibility. According to the result, as the practice of forgiveness increases, the level of cognitive flexibility also increases. In the practice scale, which is the last stage of forgiveness, the individual recognizes and internalizes forgiveness and is ready to implement it. Therefore, at this stage, the individual can look at events from different perspectives, is in search of multifaceted solutions to problems and is able to make decisions by minimizing the emotional aspect of events. In this regard, an increase in the individual's practice of forgiveness can increase the level of cognitive flexibility. No study examining the relationship between practice subscale and cognitive flexibility was found in the literature. When similar studies are considered, Thompson et al. (2005) found that forgiveness has significant relationships with cognitive flexibility in a positive direction and with rumination, negative emotions, revenge, and aggressive thoughts in a negative direction.

Negative relationships between existing meaning in life and search for meaning in life scales of meaning in life and cognitive flexibility were determined. According to the result, as cognitive flexibility increases, existing meaning in life and search for meaning in life diminishes. Cognitive flexibility means making decisions by evaluating events from different perspectives in the face of negative situations. In this context, in life of individuals who have cognitive flexibility, cognitive processes rather than emotional processes are at the forefront when making decisions in the face of events that occur. In this regard, in this process, when emotional processes are less dominant, the existing meaning in life and search for meaning in life of individuals may decrease. As for the result achieved, Kara et al. (2020) concluded in their study that there was a significant relationship between cognitive flexibility and existing meaning in life, however, there was no significant difference between cognitive flexibility and search for meaning in life. When similar studies are examined, Yelpaze and Yakar (2019) concluded that level of cognitive flexibility is a significant predictor of life satisfaction. As a result, significant differences were found in the results of comparison of psychological symptoms of faculty of sports sciences and other faculties on the basis of engagement in sports. When the level of cognitive flexibility is considered, the average score of those who engage in sports is significantly higher. According to the variable of the years of engagement in sports, it was concluded that the subscale score averages of somatization, obsessive-compulsive, interpersonal sensitivity, and depression differ significantly based on the number of years of engagement in sports ($p < .05$). When the level of cognitive flexibility is considered, it was concluded that as the year of engagement in sports increases, the average score of cognitive flexibility increases.

CONCLUSION

As a result, significant differences were found in the results of comparison of psychological symptoms of faculty of sports sciences and other faculties on the basis of engagement in sports. When the level of cognitive flexibility is considered, the average score of those who engage in sports is significantly higher. According to the variable of the years of engagement in sports, it was concluded that the subscale score averages of somatization, obsessive-compulsive, interpersonal sensitivity, and depression differ significantly based on the number of years of engagement in sports ($p < .05$). When the level of cognitive flexibility is considered, it was concluded that as the year of engagement in sports increases, the average score of cognitive flexibility increases

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