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Published in the USA
European Journal of Physical Education and Sport
Has been issued since 2013.
E-ISSN: 2409-1952
2022. 10(1): 26-35

DOI: 10.13187/ejpe.2022.1.26
<https://ejpes.cherkasgu.press>



Investigation of Cognitive Flexibility and Happiness Levels of University Students Receiving Sports Education

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Abstract

The aim of this study is to determine whether there is a relationship between cognitive flexibility and happiness levels of university students who receive sports education. In this study, descriptive (scanning) research model based on quantitative observation has been used. The study group consisted of 374 students who received sports education at Selçuk University and Necmettin Erbakan University in 2021–2022 Academic Year in Turkey and were selected by random sampling method. In the study as a data collection tool Personal Information Form developed by researchers, Cognitive Flexibility Scale (CFS) developed by Martin and Rubin (1995) and adapted into Turkish by Çelikkaleli (2014), Happiness Scale (HS) developed by Demirci and Ekşi (2018) have been used. In the data analysis of the study; independent sample t test, Pearson Correlation test, one-way analysis of variance (Anova) test have been applied.

As a result of the research, it has been found that cognitive flexibility levels of university students who received sports education did not have a significant difference according to gender, age of starting sports and family total income status variable. While it has been determined that happiness levels of university students who received sports education were not a significant difference according to the age of starting sports and family total income status variables, it has been determined that there was a significant difference as regards the gender status variable. It has been found that there was a significant weak relationship between the cognitive flexibility and happiness level of university students who received sports education and that there was a significant weak relationship between the gender variable and cognitive flexibility and happiness levels of male and female students.

Keywords: university, cognitive flexibility, happiness level, sports education.

1. Introduction

People have basic needs for psychological and physiological well-being (Sargin, Güleşce, 2022). One of the most important of these basic needs is happiness. As individuals are happy, they feel safe and adapt to their cognitive functions more easily (Öztekin, 2016).

People experience some transitional periods in which they face difficulties in meeting their basic needs. They have to adapt to these transition periods (Erdoğan et al., 2005). University life, which requires getting used to changes and overcoming the problems encountered, is one of the challenging transition periods. University life, which covers the ages of 18-25, is also referred to as the transition period to adulthood. Individuals try to gain identity for social maturity at this age

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when they transition from adolescence to adulthood. University students often face social, emotional, academic and economic problems (Erkan et al., 2012).

The transition period to adulthood, which includes the university years, is a process in which the person changes over time and therefore their happiness levels can be adversely affected (Hu et al., 2021; Özhan, Boyacı, 2018).

Individuals can be more resilient if they can show a flexible attitude in the face of problems and see alternative options for solving problems. However, if they always exhibit the same attitude in the face of problems and do not try alternative solutions, the adaptation processes are quite difficult (Toksöz, Kolburan, 2018). For this reason, their ability to cope with the difficulties encountered is of great importance (Bedel, Ulubey, 2015). One of the most important qualities that university students are expected to acquire in order to adapt to innovations is cognitive flexibility (Scott, 1962).

Cognitive flexibility can be defined as the capacity of the individual to adapt to certain situations and to approach problems in multiple directions (Stevens, 2009). Cognitive flexibility as an crucial component of the capacity of individuals to adapt to changes and the ability to change maladaptive behaviors with adaptive thinking (Dennis, Vander Wal, 2010). According to Ram, Chandran, Sadar and Gowdappa (2019), cognitive flexibility is the ability to change cognitive perspectives to adapt to changing environmental conditions (Ram et al., 2019). As can be seen from the definitions expressed, cognitive flexibility is to have the ability to make changes in affective, behavioral and cognitive areas and to cope with problems in order to overcome the situations that individuals encounter in every period of their lives.

People who are cognitively flexible show better coping when faced with any problem and can develop appropriate alternatives instead of ideas that prevent them (Küçüker, 2016). Especially in sports activities, there are many positions that need to be made during the game. For this reason, the high level of cognitive flexibility in athletes is an important determinant on the accuracy of the decisions to be made. Considering that the correct and successful decisions to be made will increase sports performance, athletes should have high levels of cognitive flexibility in order to reach the highest sports performance (Kiss et al., 2020).

When we look at the relationship between cognitive flexibility and sports, we can say that sports develop self-expression and creativity opportunities. Because the use of the body in the expression of emotions is of great importance in the formation of new movements. At the same time, sport provides appropriate opportunities for controlling emotions and discharging emotions (Kuter, Kuter, 2012). Sport is beneficial to human physical and biological health as well as emotional, neurological and cognitive processes.

In order to gain and develop these skills, the psychological health of the person is expected to be good. One of the basic requirements for psychological health is high levels of happiness. Happiness is the emotion felt at the end of a successful action and is almost a reward for human beings (Öztekin, 2016). Since happiness is the purpose of humanity's existence, it is a powerful source of motivation for it to live better (Özgen, 2007).

The concept of happiness is defined by some researchers as the affective and cognitive evaluation of life (Doğan et al., 2013). Happiness shows that man has found a solution in the face of all the situations brought about by life conditions and is considered as the criterion of competence or perfection achieved in life (Fromm, 1995). It can be stated that individuals with high levels of happiness have a system of emotions and thoughts that can find alternative solutions in the face of events and make the most appropriate feedback (Diener, Seligman, 2002).

As a result, it is understood that the concept of happiness is related to the perspective of events encountered in life and it is believed that people who are cognitively flexible may have high happiness levels. In order for individuals to adapt to the changes they experience during the university period, their happiness levels and cognitive flexibility levels should be high. The purpose of the current research is to examine the relationship between the cognitive flexibility and happiness levels of university students who receive sports education and to create the necessary awareness to increase these qualities.

2. Method

In the current research, a descriptive (scanning) research model based on quantitative observation was used. The descriptive model is a research model that aims to describe a situation that has existed in the past or still exists (Karasar, 2017).

Research Group

The research group consisted of 374 university students who received sports education at Selçuk University and Necmettin Erbakan University in 2021-2022 Academic Year in Turkey and were selected by random sampling method.

Data Collection Tools

Personal Information Form: The personal information form prepared by the researchers in order to collect information about the university students participating in the research consists of questions to determine the gender of the students, the age of starting sports and the total income status of the family.

Cognitive Flexibility Scale: Cognitive Flexibility Scale (CFS) has been developed by Martin and Rubin (1995) to determine the cognitive flexibility levels of individuals and Çelikkaleli (2014) adapted it into Turkish. The scale, which consists of 12 items and one dimension, is of the 6-point Likert type. The internal consistency coefficient (α) of the measurement tool is stated as .80 and the test-retest reliability coefficient is stated as .83.

Happiness Scale: Happiness Scale (HS) has been developed by Demirci and Ekşi (2018) in order to determine happiness levels of individuals. Happiness Scale consisted of a one-dimensional structure consisting of 6 items with an intrinsic value of 3.248 and explaining %54.129 of the total variance. The Cronbach alpha internal consistency coefficient of the scale was calculated as .83. The test-retest reliability coefficient of the scale was determined as .73.

Analysis of Data

In the statistical analysis of the data, SPSS 22 package program has been used. For the normality analysis of the data, skewness and kurtosis values have been examined. It has been determined that data exhibited a normal distribution. Pearson Correlation test, one-way analysis of variance test for multiple comparisons, independent sample t test have been applied to determine the relationship between scales.

3. Results

Table 1 shows Skewness and Kurtosis values for normality analysis of the data.

Table 1. Normality Analysis of Data

	Skewness	Kurtosis
Cognitive Flexibility	-,085	-,267
Happiness Level	-,733	,617

The data show a normal distribution since skewness and kurtosis values in the range of -1.5 and +1.5 (Tabachnick et al., 2007).

In Table 2, the numerical distribution of Personal Information Form comprising of 3 questions is given on account of specify personal information of the students receiving sports education.

Table 2. Numerical Distribution of Personal Information Form

Variable	Group	N	%
Gender	Female	158	42,2
	Male	216	57,8
Family Total Income	0-4000 TL	117	31,3
	4001-5500 TL	95	25,4
	5501-7000 TL	74	19,8
	7001-8500 TL	27	7,2
	8501-10000 TL	25	6,7
	10001 TL and over	36	9,6

Age to Start Sports	4-8	50	13,4
	9-13	173	46,3
	14-18	120	32,1
	19 and over	31	8,3

In Table 3, the conclusions of t test for the cognitive flexibility and happiness levels of the students who received sports education according to the gender variable are included.

Table 3. Independent Sample by Gender Variable t Test

	Group	N	\bar{x}	ss	P
Cognitive Flexibility	Female	158	4,64	,626	,745
	Male	216	4,61	,696	
Happiness Level	Female	158	3,98	,753	,037*
	Male	216	3,80	,836	

*p < .05

As a consequence of independent sample t test conducted to specify whether there was a significant difference between cognitive flexibility and happiness level according to gender variable, there was no significant difference in happiness levels and no significant difference in cognitive flexibility levels.

In Table 4, the results of the one-way variance analysis for the cognitive flexibility and happiness levels of the students who received sports education according to the variable of the age of starting sports are included.

Table 4. One-Way Analysis of Variance According to the Age of Starting Sports Status Variable

	Group	N	\bar{x}	Ss	F	P
Cognitive Flexibility	A 4-8	50	4,74	,712	2,251	,082
	B 9-13	173	4,61	,662		
	C 14-18	120	4,53	,642		
	D 19 and over	31	4,83	,671		
Happiness Level	A 4-8	50	3,94	,938	1,924	,125
	B 9-13	173	3,93	,725		
	C 14-18	120	3,74	,829		
	D 19 and over	31	4,03	,879		

*p < .05

As a conclusion of one-way analysis of variance conducted to designate whether there was a significant difference between cognitive flexibility and happiness level as regards age of starting sports variable, no significant difference was found between cognitive flexibility and happiness level.

In Table 5, the consequences of one-way variance analysis for cognitive flexibility and happiness levels of the students who received sports education according to the family total income status variable were included.

Table 5. One-Way Analysis of Variance by Family Total Income Status Variable

	Group	N	\bar{x}	ss	F	P
Cognitive Flexibility	A 0-4000 TL	117	4,61	,647	,421	,834
	B 4001-5500 TL	95	4,62	,607		
	C 5501-7000 TL	74	4,56	,699		
	D 7001-8500 TL	27	4,76	,834		

Happiness Level	E	8501-10000	25	4,69	,635		
	F	10001 TL and over	36	4,63	,723		
	A	0-4000 TL	117	3,88	,731		
	B	4001-5500 TL	95	3,80	,872		
	C	5501-7000 TL	74	3,91	,843	1,611	,156
	D	7001-8500 TL	27	4,20	,681		
	E	8501-10000	25	3,99	,636		
	F	10001 TL and over	36	3,68	,923		

*p < .05 TL: Turkish Lira

As a conclusion of one-way analysis of variance conducted to specify whether there is a significant difference between cognitive flexibility and happiness level according to the family total income status variable, no significant difference was found between cognitive flexibility and happiness level.

In Table 6, the consequences of Pearson Correlation Test conducted to designate the relationship between cognitive flexibility and happiness levels of students receiving sports education are included.

Table 6. Pearson Correlation Test to Designate the Relationship Between Cognitive Flexibility and Happiness Levels of Students Receiving Sports Education

		Cognitive Flexibility	Happiness Level
Cognitive Flexibility	r		,264**
	p		,000
Happiness Level	r	,264**	
	p	,000	

According to the conclusions of Pearson Correlation Test, which was conducted to reveal whether there was a significant relationship between cognitive flexibility and happiness level for all participating students, it has been found that there was a significant weak relationship between cognitive flexibility and happiness level.

In Table 7, the consequences of Pearson Correlation Test conducted to specify the relationship between cognitive flexibility and happiness levels of students who received sports education according to gender variable are included.

Table 7. Pearson Correlation Test to Designate the Relationship Between Cognitive Flexibility and Happiness Levels of Students Receiving Sports Education As Regards Gender Variable

		Cognitive Flexibility	Happiness Level
Female	Cognitive Flexibility	r	,318**
		p	,000
	Happiness Level	r	,318**
		p	,000
Male	Cognitive Flexibility	r	,231**
		p	,001
	Happiness Level	r	,231**
		p	,001

According to the consequences of Pearson Correlation Test, which was conducted to reveal whether there is a significant relationship between cognitive flexibility and happiness level as

regards gender variable, it has been found that there was a significant weak relationship between cognitive flexibility and happiness level of female students who received sports education. It has been found that there was a significant weak relationship between cognitive flexibility and happiness level of male students who received sports education.

4. Discussion

In the current study, which examines the relationship between cognitive flexibility and happiness levels of university students receiving sports education, the variables of gender, family total income and age of starting sports were examined and the determined results were discussed in this section.

When the gender variable was examined in Table 3, it was found that there was no significant difference in the cognitive flexibility levels of university students who received sports education, while there was a significant difference in their happiness levels. It has been found that happiness levels of female university students who received sports education were higher than male students. Although there was not a big enough difference to make a significant difference, when the findings were examined in detail, it has been found that the cognitive flexibility levels of female students who received sports education were higher than male students.

It is thought that cognitive flexibility levels of female university students who receive sports education are higher than male students may be due to cultural reasons. Since women in society grow up with a more oppressive upbringing style than men, it is thought that their ability to produce alternative ideas to problems is more developed and at the same time, since women can think more in detail on the current issue due to their nature and approach it with different perspectives, their cognitive flexibility levels are higher than men, although not big enough to make a significant difference. It is thought that happiness levels of female university students who receive sports education are higher than men may be related to their cognitive flexibility levels and may be due to the fact that women inherently experience all emotions intensely.

When the literature is examined, although many of the studies on cognitive flexibility support the current study, there are studies that have reached opposite conclusions.

In the study in which Kara (2020b) examined the meaning of life, forgiveness flexibility, cognitive flexibility and psychological symptoms in individuals who do and do not do sports according to various variables, Kara (2020a) examined the decision-making styles and cognitive flexibility levels of athletes in the karate branch, Parvizi and Özabacı (2021) examined that cognitive flexibility affects psychological well-being and life satisfaction of university students. In the study in which Bayram, Özkamalı and Çiftçi (2021) examined the relationship between uncertainty intolerance and cognitive flexibility levels of university candidates in the preference process, Aktepe (2019) examined the gender and humor styles of high school students' cognitive flexibility, and Tuncer and Tanaş (2022) examined the relationship between cognitive flexibility and self-regulation skills in the research in which they examined the relationship between cognitive flexibility and self-regulation skills. It was found that it did not differ.

In the study in which Yavuz (2019) analyzed psychological resilience and cognitive flexibility levels of physically disabled athletes, it was designated that there was a significant difference in the levels of cognitive flexibility as regards gender variable and that female athletes had more cognitive flexibility levels than male athletes. In the study in which Yukay Yüksel, Sayın and Dinç (2020) examined the effect of cognitive flexibility and rumination on the prediction of academic procrastination behaviors of high school students, it has been found that there was a significant difference between cognitive flexibility levels as regards gender variable and that the cognitive flexibility levels of female students were higher than male students.

In the study in which Yelpeze and Yakar (2019) examined the life satisfaction and cognitive flexibility of university students, it was found that the cognitive flexibility levels of male students were higher than female students where cognitive flexibility levels differed according to gender variable.

When the literature is examined, there are studies on the level of happiness. In the research in which Ekinçi and Hamarta (2020) examined the perseverance and happiness levels of vocational school students, it has been stated that happiness levels did not differ significantly in terms of gender variable.

In the research in which Kırık and Sönmez (2017) examined the relationship between communication and happiness, Kızılay (2018) examined the effect of psychological empowerment on happiness and job satisfaction, and Asıcı and İkiz (2015) examined cognitive flexibility levels of university students on the way to happiness, it has been specified that there was no significant difference in happiness levels in the way of gender variable.

When the age of starting sports variable was examined in Table 4, it has been determined that there was no significant difference between cognitive flexibility and happiness level. However, when the findings are examined in detail, it is seen that the group that starts sports at the age of 19 and over and the group that starts sports at the age of 4-8 have a higher level of cognitive flexibility than other groups. The reason for this may be that the individuals who started sports in the 4-8 age range have been in sports for many years and that they have gained the ability to think in many ways, which is among the benefits of sports, and on the contrary, it is thought that the cognitive flexibility levels are high in the findings because the individuals who start sports after the age of 19 can have positive contributions to their lives due to the high level of cognitive flexibility. It is seen that there is no significant difference between happiness levels, but it is seen that the happiness levels of individuals who start sports after the age of 19 are at the highest level. It is thought to be caused by similar causes. It is observed that cognitive flexibility and happiness levels progress in parallel. In the literature, there was no study examining the effect of the age of starting sports on cognitive flexibility and happiness level.

When the family total income status variable was examined in Table 5, it has been designated that there was no significant difference between cognitive flexibility and happiness level. Although there are small differences that do not make a significant difference, it is seen that individuals with a family total income status of 7001-8500 TL are the group with the highest level of cognitive flexibility and happiness. The fact that the group with the highest cognitive flexibility from the findings also had the highest level of happiness, cognitive flexibility and happiness level supports the relationship test results.

In literature Öz (2012) examined the cognitive flexibility, adaptation and anxiety scores of adolescents as regards their gender, socio-economic and learning levels and Ekici and Balcı (2019) specified cognitive flexibility levels and emotional reactivity levels of preschool teacher candidates, it has been found that there was no significant difference in cognitive flexibility levels in terms of income level.

As a result of the research in which Yıldız (2015) examined the socialization and happiness levels of university students who doing sports or not, it has been stated that there was no significant difference in the happiness levels of the students as regards the family income status variable. In the research in which Barutcu (2022) designated the relationship between emotional intelligence and happiness levels of students of the Faculty of Health Sciences, it has been determined that happiness levels did not differ according to economic status. In the study in which the emotional intelligence and happiness of Tingaz and Hazar (2014) physical education and sports teachers and some teacher candidates were examined, it has been specified that there was no significant difference in the happiness levels of physical education and sports teaching students according to their income status.

In Table 6, it has been determined that there was a significant weak relationship between the cognitive flexibility and happiness level of all participating sports students.

It is thought that individuals with high cognitive flexibility have good psychological health and therefore their happiness levels are high because they can easily overcome the problems they encounter due to the fact that they can look at events in many ways, adapt more easily to innovations and are open to change.

When the field was examined, Asıcı and İkiz (2015) examined the relationship between cognitive flexibility and happiness levels in the research "A path to happiness: Cognitive flexibility" and concluded that there was a significant relationship in a positive direction. The results support the current study. There has been no other research in the literature investigating the relationship between cognitive flexibility and happiness level. However, there are studies that examine the relationship between positive emotions and psychological well-being and cognitive flexibility. In the research in which Özhan and Boyacı (2021) determined that there was a relationship between cognitive flexibility and well-being levels of university students, it has been found that there were affirmative significant relationships between cognitive flexibility and emotions, meaning, success and

attachment levels, which are the components of total well-being and well-being. In the research in which Parvizi and Özabacı (2021) examined that cognitive flexibility affects psychological well-being and life satisfaction of university students, it has been found that there is a relationship between cognitive flexibility and psychological well-being of university students.

In Table 7, it has been stated that there was a significant weak relationship between cognitive flexibility and happiness level of female students who received sports education according to gender variable and between cognitive flexibility and happiness level of male students who received sports education.

When the findings are examined in detail, it is observed that the relationship between the cognitive flexibility and happiness level of female students is higher than that of male students. Since women may be more affected by their emotions than men, it is not thought to be a coincidence that happiness levels have a higher impact on cognitive flexibility levels than men. When the literature was examined, there was no study that examined the relationship between cognitive flexibility and happiness level according to gender variable.

5. Conclusion

As a result, it has been designated that the high level of cognitive flexibility of university students who received sports education increased their happiness levels and that the cognitive flexibility levels of the students with high happiness levels were also high.

6. Suggestions

In order for students to lead a happier and more successful life, recreational activities can be organized at the university where they are located in order to increase their cognitive flexibility levels and therefore their happiness levels.

Since it is determined that the happiness levels of female students are higher in the current study, it can be investigated what kind of activities they participate in different from male students and what they do differently from men in daily life and studies can be carried out to increase the happiness levels of male students in line with the results obtained.

The effect of cognitive flexibility levels of students receiving sports education on academic success can be investigated.

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