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Decision-Making Styles and Cognitive Flexibility Levels of the Football Players

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Abstract

The methodology used in this study was Melbourne Decision Making Questionnaire which consists of two sub-dimensions. The first sub-dimension (MDMQ I), which consists of six items, is a scale aimed at determining self-esteem in decision making. The other one, MDMQ II, consists of 22 items and measures decision-making styles. On the other hand, the Cognitive Flexibility Scale (CFS), consists of 12 items and one sub-dimension. In the study, no significant difference was found in the sub-dimensions of Decision Making Self-Esteem and Decision Making Styles and in Cognitive Flexibility scores of the athletes according to the age variable and the position they played. Also, in the study, while there was no significant difference in Decision Making Self-Esteem and Decision Making Styles in terms of education level and training age variables, a significant difference was found in Cognitive Flexibility according to both education level and training age ($P < 0.05$). Finally, in the study, it was revealed that there was a moderate positive relationship between the Decision Making Self-Esteem sub-dimension and Decision-Making Styles.

Introduction:

Football is one of the most widespread and exciting sports organizations in the world. One of the most important reasons why football is so common and popular is that it includes high intensity and short-term activities such as sudden changes of direction, sprints, and jumps that can create instant changes on the course of the game (Stolen *et al.*, 2005). Therefore, this game, which necessitates rapid decision-making in such a high intensity, requires the players to prepare themselves in the best way. For this reason, it is noted that as well as being physically ready, football players must also be mentally prepared in the best possible way and also have the ability to make the right decision in an optimal way. Decision making is people's choosing the most appropriate action that suits for them among the available actions to achieve the goal. Decision-making includes all of the cognitive and behavioural situations that enable an individual to make choices among different situations. It is quite likely for people to encounter many instances of decision-making behaviour in daily life. This decision-making situation can sometimes be very difficult to figure out in terms of its structure. Decision-making can be expressed as a disposition that reduces the

problems faced in the case of making several choices based on needs (Aygün, 2018). Also, decision-making is a natural process that human beings, by their nature, face in all situations. Although the decision-making process is considered to be an easy process, it actually emerges as a complex process (Pekdogan, 2015). Therefore, decision-making is all the cognitive and behavioural efforts related to issue of making choices among the available options (Deniz, 2004) and the determination of the most appropriate option for the purpose by evaluating all dimensions of the problems encountered (Eroglu & Lorcü, 2007). Decision making and decision making style is of great importance in the sports environment as in the normal life of people. Especially the decisions made appropriately and on time during sports competitions will affect the competition positively while wrong decisions or decisions made at the wrong time will affect the athlete in the competition negatively and so the result of the competition (Leveaux, 2010). In many sports branches, athletes have to decide between various possibilities. While a football player needs to decide when and where to hit the ball, a gymnast decides about a new series of movements and a wrestler should make a decision on his style to apply a

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certain grip technique. In the process of decision making, all these athletes may get stuck in the practicing stage of the decision made internally. Although the athletes choose one of the possibilities in such a situation, the steps to realize the action is either taken late or not taken at all (Baumann, 1986).

Football players must inevitably show a reaction in the course of an unexpected and sudden pattern of events in view of the pace and continuity of the game. It is essential to be flexible in such an intense and rapid game. Therefore, cognitive flexibility is required so as to meet such intense demand successfully, since flexible cognition necessitates taking action dynamically and modifying cognitive processes in response to changing task demands (Deák, 2003). The concept of cognitive flexibility was defined as the ability to naturally restructure the level of cognition that an individual has in order to respond to demands suitably because of changing situations (Spiro & Jeng, 1990). It was also defined as an individual is aware that there exist appropriate options for every situation and realising the potency of being able to adapt to the new situation (Martin & Rubin 1995, Martin & Anderson, 1998 and Martin *et al.*, 1998) (cited in Çelikkaleli, 2014).

As a result of all these evaluations, if you want to increase the pace of the game in football and get one step ahead, it is necessary to think faster, that is, to make quick decisions and be flexible, instead of having faster feet. Therefore, it is believed that the investigation of the relationship between decision-making skill and cognitive flexibility and the results of this investigation can contribute positively to both the literature and football players.

Methodology:

In this section, the research methodology including the research design, population and sample, data collection tools, data analysis and statistical techniques are explained.

In the study, a survey model, a quantitative research method, was used. Survey models are research approaches that aim to describe a past or present situation as it is.

The population of the study consisted of amateur football players in Sanliurfa province. Accordingly, the sample of the study was comprised of 107 amateur football players who voluntarily agreed to participate in the study.

Melbourne Decision Making Questionnaire (MDMQ I) is a scale aimed at determining self-esteem in decision making and consists of six items. MDMQ II, on the other hand, consists of 22 items and it measures decision making styles with four sub-scales. These are as follows: Vigilance (6 items), Buck-passing (6 items), Procrastination (5 items) and Hypervigilance (5 items). The reliability coefficients of the sub-scales were calculated as .80 for vigilance; .87 for buck-passing; .81 for procrastination, and .74 for hypervigilance (Mann *et al.*, 1998). Adaptation studies of

MDMQ I-II into Turkish were carried out by Deniz (2004) with the participation of university students. On the other hand, the Cognitive Flexibility Scale developed by Martin & Rubin (1995) consists of 12 items and one dimension. The adaptation of the Cognitive Flexibility Scale (CFS) to Turkish was conducted by Çelikkaleli (2014) by gathering data from 370 high school students.

SPSS 21.0 package program was used for the analysis of the data obtained. Normality and homogeneity of the data obtained from the Decision Making Self-esteem and Decision Making Styles, as well as the Cognitive Flexibility scale, were checked. It was observed that the data did not show a normal distribution. As a result, in the study, Kruskal Wallis Test was used for multiple comparisons and Pearson Correlation Analysis was applied for relationship analysis. The analysis of the data was evaluated at 95% confidence interval and $p < 0.05$ significance level.

Results:

Table 1 presents demographic information about the athletes participating in the study.

Table-1: Demographic Information

Variables	F	%	Variables	F
Age				
16-20 year	39	36.4	21-25 year	42
26-30 year	20	18.7	31+ year	6
Education Level				
Middle School	20	18.7	High school	52
Undergraduate	35	32.7		
Training Age				
1-3 year	9	8.4	4-5 year	24
6-7 year	37	34.6	8-15 year	37
Position				
Goalkeeper	12	11.2	Defence	34
Midfield	39	36.4	Forward	22

Table-3 demonstrates that there is no significant difference according to education level variable considering the athletes' scores in the sub-dimensions of Decision Making Self-Esteem and Decision Making Styles while a statistically significant difference was found in terms of the Cognitive Flexibility scale.

According to Table-4, there was no significant difference in the scores of the athletes participating in the study according to the sub-dimensions of Decision Making Self-Esteem and Decision Making Styles in terms of the training age variable, while a significant difference was found in terms of the Cognitive Flexibility scale.

As per Table-5, no statistically significant difference was found in terms of the position variable played by the athletes participating in the study according to the scores they received from the Decision Making Self-Esteem and Decision Making Styles sub-dimensions and the Cognitive Flexibility scales.

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Table-2: ANOVA Test Results of Decision Making and Cognitive Flexibility According to the Age Variable

Scales							
Sub-dimensions							
Age	N	Mean	Std. Dev.	Age	N	Mean	Std. Dev.
Decision Making							
Self Esteem		(F=.771; P=.513)					
16-20	39	4.23	2.032	21-25	42	4.45	1.685
26-30	20	4.45	2.373	31+	6	3.17	2.639
Decision Making Styles							
Vigilance		(F=.427 ; P=.734)					
16-20	39	2.54	1.760	21-25	42	2.98	1.854
26-30	20	2.70	1.838	31+	6	2.50	2.168
Buck-passing		(F=1.123; P=.343)					
16-20	39	6.03	3.074	21-25	41	5.37	2.913
26-30	20	4.60	3.283	31+	6	4.67	2.944
Procrastination		(F=.699; P=.555)					
16-20	39	4.85	1.927	21-25	41	4.90	2.300
26-30	20	4.45	2.305	31+	6	3.67	2.733
Hypervigilance		(F=.753; P=.523)					
16-20	39	4.62	2.581	21-25	42	4.07	2.321
26-30	20	3.65	2.134	31+	6	4.00	3.578
Cognitive Flexibility							
Total score		(F=1.545; P=.207)					
16-20	38	32.39	6.275	21-25	42	31.83	8.109
26-30	20	35.65	5.958	31+	6	31.17	4.119

Table-3: ANOVA Test Results of Decision Making and Cognitive Flexibility According to the Education Level Variable

Scales							
Sub-dimension (F; P; Diff)							
Edu.	N	Mean	S.D.	Edu.	N	Mean	S.D.
Decision Making							
Self Esteem		(F=.113; P=.893)					
Middle Sch.	20	4.45	1.731	High Sch.	52	4.21	2.190
Undergrad.	35	4.34	1.893				
Decision Making Styles							
Vigilance		(F=1.040; P=.357)					
Middle Sch.	20	3.15	2.033	High Sch.	52	2.79	1.649
Undergrad.	35	2.43	1.929				
Buck-passing		(F=.255; P=.775)					
Middle Sch.	20	5.00	3.261	High Sch.	52	5.58	3.262
Undergrad.	34	5.44	2.631				
Procrastination		(F=.076; P=.927)					
Middle Sch.	20	4.85	2.346	High Sch.	52	4.75	2.047
Undergrad.	34	4.62	2.349				
Hypervigilance		(F=.529; P=.591)					
Middle Sch.	20	3.70	2.557	High Sch.	52	4.23	2.462
Undergrad.	35	4.40	2.416				
Cognitive Flexibility							
Total Score		(F=6.346; P=.003; Diff.=3-1, 3-2)					
Middle Sch.(1)	19	36.16	5.367	High Sch.(2)	52	33.46	6.011
Undergrad.(3)	35	29.74	8.064				

Table 6 demonstrates that there is a moderate positive relationship between the Decision Making Self-Esteem sub-dimension and Decision Making Styles of the athletes participating in the study.

Table-4: Anova Test Results of Decision Making and Cognitive Flexibility According to the Training Age (T.Age) Variable.

Scales							
Sub-dimensions							
T. Age	N	Mean	SD	T. Age	N	Mean	SD
Decision Making							
Self Esteem		(F=1.547; P=.207)					
1-3	9	3.22	1.922	4-5	24	4.29	2.349
6-7	37	4.14	1.669	8-15	37	4.73	2.036
Decision Making Styles							
Vigilance		(F=1.568; P=.202)					
1-3	9	2.33	1.581	4-5	24	3.38	1.952
6-7	37	2.76	1.770	8-15	37	2.41	1.787
Buck-passing		(F=.818; P=.487)					
1-3	9	5.33	2.739	4-5	24	5.71	3.141
6-7	36	4.81	3.179	8-15	37	5.86	2.955
Procrastination		(F=.507; P=.679)					
1-3	9	4.22	1.986	4-5	24	4.46	2.322
6-7	36	4.72	1.921	8-15	37	5.03	2.409
Hypervigilance		(F=.561; P=.642)					
1-3	9	3.33	2.500	4-5	24	4.00	2.485
6-7	37	4.24	2.087	8-15	37	4.46	2.785
Cognitive Flexibility							
Total Score		(F=2.764; P=.046*; Diff.= 2-4)					
1-3 (1)	9	33.56	8.457	4-5 (2)	23	35.00	6.230
6-7 (3)	37	33.59	5.177	8-15 (4)	37	30.22	8.094

Table-5: ANOVA Test Results of Decision Making and Cognitive Flexibility Scales According to The Position Variable.

Scales							
Sub-dimensions							
Pos.	N	Mean	SD	Pos.	N	Mean	SD
Decision Making							
Self Esteem		(F=.653; P=.583)					
Goalkeeper	12	4.58	1.379	Defense	34	4.62	2.174
Midfield	39	4.03	1.814	Forward	22	4.14	2.336
Decision Making Styles							
Vigilance		(F=1.140; P=.337)					
Goalkeeper	12	2.50	1.732	Defense	34	2.41	1.971
Midfield	39	3.15	1.814	Forward	22	2.64	1.590
Buck-passing		(F=.376; P=.770)					
Goalkeeper	11	4.91	3.14	Defense	34	5.76	3.677
Midfield	39	5.15	2.641	Forward	22	5.64	2.735
Procrastination		(F=.803; P=.495)					
Goalkeeper	12	5.25	2.417	Defense	33	4.48	2.181
Midfield	39	4.51	1.931	Forward	22	5.18	2.500
Hypervigilance		(F=.716; P=.544)					
Goalkeeper	12	4.58	3.029	Defense	34	4.50	2.722
Midfield	39	3.74	2.173	Forward	22	4.27	2.186
Cognitive Flexibility		(F=1.342; P=.265)					
Total Score							
Goalkeeper	11	29.09	8.154	Defense	34	32.71	6.013
Midfield	39	33.85	7.583	Forward	22	32.55	6.537

Discussion:

This study was carried out to examine the decision-making self-esteem, decision-making styles and cognitive flexibility attitudes of amateur football players according to different variables and to find out whether there is any

relationship between these. In the literature, there exist numerous studies on both Decision Making (Işım et al. 2019, Demir et al., 2018, Aksu & Arslan 2020, Güvendi et al. 2018, Keleşek et al., 2015, Nas, 2017, Kaya, 2014; Certel, 2012, Chelladurai & Arnott, 1985, Sunar et al., 2009) and Cognitive Flexibility (Özcan & Esen; 2016, Bedel, 2015; Lerche et al., 2018; Dalkılıç 2017; Dalkılıç, 2017 Laurerio-Martinez & Brusoni, 2016; Stad et al., 2019; Braem & Egner, 2018; Zmigrod et al., 2019). However, the present study was conducted to reveal the level of flexibility structures as well as the cognitive awareness of football players in the face of the ever-changing pace of the game and in the sudden decision-making situation. In the study, no significant difference was found in the decision-making self-esteem and decision-making styles sub-dimensions and cognitive flexibility scores of football players according to the age variable ($P > 0.05$). Similarly, in their study, Demir et al. (2018) did not find any significant difference in terms of the age variable. Also, Aksu & Arslan (2020) stated in their study on the decision-making styles of soccer referees that there was no significant difference regarding the scores of self-esteem in decision-making and decision making styles according to the age variable.

Table-5: Decision Making (Dec. Mak.). Decision Making Styles (Dec. Mak. St.), Cognitive Flexibility (Cog. Flx.) and Correlation Analysis

	Ananalysis	Dec. Mak.	Dec. Mak.St.	Cog. Flx.
Dec. Mak.	CorrelationCoefficient	1.000	.672**	-.070
	Sig. (2-tailed)		.000	.476
	N	107	105	106
Dec. Mak. St.	CorrelationCoefficient	.672**	1.000	-.165
	Sig. (2-tailed)		.000	.094
	N	105	105	104
Cog. Flx.	Pearson Correlation	-.070	-.165	1.000
	Sig. (2-tailed)	.476	.094	
	N	106	104	106

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

In the study, while there was no significant difference in the scores of the decision-making self-esteem and decision-making styles sub-dimensions according to the education level variable, a significant difference was found according to Cognitive Flexibility ($P < 0.05$). In the literature, Demir et al. (2018) reported that there is a significant difference in terms of the education levels of athletes. In the study by Dinçer (2013), a significant difference was found in decision-making styles and its sub-dimensions according to the education level variable and it was revealed that this difference emerged as the education level increased. It seems that these results contradict with the one in our study. However, while there is a significant difference according to the level of cognitive flexibility in the study, Özbey (2019) did not find a significant difference according to the education level variable in his study. Also, in the study conducted by Bilgiç & Bilgin (2016), it was noted that there

was no significant difference between education level and cognitive flexibility levels. It seems that this situation is not parallel with the study conducted.

In the study, there was no significant difference in the sub-dimensions of decision-making self-esteem and decision-making styles of the participating football players according to the training age variable ($P > 0.05$), while a significant difference was found in terms of Cognitive Flexibility ($P < 0.05$). Keleşek et al. (2018) and Güvendi et al. (2018) did not find a significant difference in the decision-making styles of athletes according to their training years. This result is similar to the result of the study.

In the study, no significant difference was found in decision-making self-esteem, and decision-making styles sub-dimensions and cognitive flexibility levels according to the positions of football players ($P < 0.05$). Akbulut et al., in their study on amateur footballers, stated that there was no significant difference according to the positions of the players. However, Işım et al. (2019) reported that there was a significant difference in decision-making self-esteem dimension according to the positions.

Finally, in the study, it is seen that there is a moderately positive relationship between the decision-making self-esteem sub-dimension of football players and their decision-making style. Therefore, this study suggests that it will be possible to achieve success in the best way as long as you can make decisions according to the instant changes in the game of football and show flexibility on these decisions.

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