

# Evaluation of Cognitive Flexibility and Goal Orientation Levels of Students Preparing for Special Talent Exam

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## Abstract

In the current study, it is aimed to determine the correlation between cognitive flexibility levels and goal orientation levels of the students who are preparing for special talent exams for sports, and to compare these in terms of various demographics. The study group of the research consists of students (n=351) preparing for special talent exams in order to study at faculties/schools of higher education of sports of the universities predetermined through convenience sampling method, which is a sampling method that is not based on probability, that will accept students for 2021-2022 academic year. 180 of the participants are female (51.3%) whereas 171 of them are male (48.7%). In the study, “Cognitive Flexibility Inventory” (CFI) and “Task and Ego Orientation in Sports Questionnaire” (TEOSQ) are used. In order to evaluate CFI and TEOSQ levels of the participants in terms of various demographic features, t-test, ANOVA and Pearson Correlation tests are used. Before the statistical analysis of the obtained data, skewness and kurtosis values of the data are calculated to determine if the data has normal distribution, and it is determined that the data has normal distribution. As a result of the research, it is determined that there is a significant and positive correlation between cognitive flexibility and task-oriented goals and ego-oriented goals. In addition, it is seen that there is a significant difference in control subscale of cognitive flexibility and goal-oriented and ego-oriented targets subscales of participants when the high schools of the participants are considered.

**Keywords:** cognitive flexibility, task and ego orientation in sports, special talent exam, physical education

## 1. Introduction

Special talent is the capacity of an individual to learn mental or physical actions. It involves intelligence, creativity and performance of an individual (Özgül, 1994, p. 4). The acceptance to the departments at certain faculties/schools of higher education of higher education institutions in Turkey requires special talent exams. Schools of Physical Education and Sports are also among these faculties/schools of higher education (ÖSYM/Student Selection and Placement Department, 2021, p. 34).

The major requirement of studying at Faculties of Sport Sciences and Schools of Physical Education and Sports is special talent. Each year, special talent exams are held in order to measure talents, knowledge, behaviors and predispositions levels of individuals and to select students for these institutions. During these exams, the student candidates are also observed if they are aware of their ways out, if they can find different solutions and if they can facilitate control in case, they are not able to do what is required of them. It is highly probable that when preparing for special talent exams, students may experience underperformance due to the factors such as excitement, anxiety, lack of motivation. This process is the indicator of how individuals develop their learning paths and strategies. It is stated that if the eagerness of an individual related to being flexible in their thoughts increases, and if the result of their behavior proceeds positively, the success rate in special talent exams will increase. On the other hand, the development of cognitive flexibility will help individuals to cope with the negative incidents that can emerge (Zahal, 2014, p. 1, 33, 89).

Well, what is cognitive flexibility? Cognitive flexibility is about an individual's perception tendency of difficult situations as manageable, about the skill of perceiving situations or reaction that they can encounter in their lives in a way in which they can find alternatives, and about the skill of generating a great number of solutions when coping with difficult situations (Asıcı & İkiz, 2015, p. 194). Consequently, cognitive flexibility can be addressed

as the ability to adapt certain situations, the skill of transferring from one thought to another or the capacity of approaching various problems with multidimensional strategies (Stevens, 2009). By another description, cognitive flexibility is the capacity of changing working storage, attentiveness and choice of response in answer to the ever changing internal and external task demands (Deák & Wiseheart, 2015).

It is only natural that an individual has different thoughts towards a given situation when compared to the other individuals since an individual has the right to choose and apply different behaviors in a situation. Before deciding on a behavior to exhibit, an individual must be aware of what the alternatives/choices are. The individual who is aware of the alternatives related to a certain situation thinks more that the individual who determined the rightest behavior. This is an indicator that this individual can generate more than one solution method at the same time (Bilgin, 2009, p. 143).

Individuals with cognitive flexibility are thought to be the people who are able to realize their own potentials, who can struggle against the uneasiness they experience against a difficult situation, and who have their distinctive strategies (Laçın & Yalçın, 2018, p. 360). Therefore, individuals with a high level of cognitive flexibility are observed to be the individuals that tend more to think of the alternatives which are more productive and positive. In reality, realizing what the problem is and thinking different significantly contribute to creative success in terms of generating solution to the problems in the long term. Consequently, realizing what the problem is plays a vital role in creativity. To Fox and Schirmacher (2014), creativity is the skill to look at a situation with different point of views, overreaching the given knowledge and stepping outside the box, thinking different from the traditional ways, doing something authentic, and combining things which seem irrelevant together in order to create something new. It is stated that creative thinking emerges from the total of fluency, originality, flexibility and deepening skills (Chien & Hui, 2010) which is thought to be directly related to cognitive flexibility as mentioned before.

Cognitive flexibility includes skills such as paying attention to different angles, choosing the information to follow, choosing the reaction to show in the next step, planning, setting goals, detecting faults and giving feedback related to these faults to the system (Küçüker, 2016, p. 26). As it is mentioned in this information, it is thought that the concept of goal-orientation is a subject to be explained in terms of coping with the problems when setting and reaching the goals. In the current study, the correlation between cognitive flexibility and goal orientation is aimed to be explained.

Goal orientation is defined as individuals' being involved in various goals or activities and tending to behave in a various way in order to obtain the sense of achievement when they reach their goals. Therefore, goal orientation is accepted as the lens with which an individual evaluates their skill level and success. In this process, behavior orientations emerge as task and ego-oriented goals (Toros & Koruç, 2005, pp. 136-137).

Individuals with task orientation do not compare their skills with others, and focus improving themselves comparing their past performances. Individuals with ego orientation; on the other hand, compare themselves with others, try to beat others, and they are focused on the result. Consequently, when individuals with this orientation win, they feel good, when they lose, they feel sad (Weinberg & Gould, 2015, p. 64). In other words, task-oriented individuals define training or competition as an environment where they can compare their past performances and skill levels. Thus, they feed the sense of content towards self by strengthening their skills, knowledge and talents they have. Not only during the competition but also during the training, the individual is focused on performing their best. On the other hand, ego-oriented individuals deem their teammates and opponents as a criterion and relax when they see themselves better than others. As a result, it is possible to state that task-oriented individuals or athletes are more content with their success, enjoy this more and focus on their task more since being task-oriented brings about many positive results. For instance, if an athlete is task-oriented, he/she wants to train, learn new skills, put in work more, cooperate and do better than his/her previous performance (Altıntaş & Bayar Koruç, 2010, pp. 72-73).

Since the current study will determine the correlation between cognitive flexibility and goal orientation levels of students preparing for special talent exams, it will reveal the levels of generating alternative solutions when the individuals have difficulties related to both special talent exam and to their lives. In addition, the study will also reveal some psychological variables that affect/do not affect the candidates' success levels positively, negative and will contribute to them in terms of eliminating the negative factors. These carry importance in terms of the study.

## 2. Method

### 2.1 Research Model

In the current study, descriptive/scanning model was utilized which enables researchers to evaluate the existing situation. Scanning model is a research approach that aims to define a situation that existed in the past or exists at the moment as they are. In scanning model, scanning is done on a group of object or sample group that is chosen from a universe consisting of many individuals in order to reach a general estimation (Karasar, 2008). Descriptive studies are researches that aim to obtain the description of an issue or activity that the individuals are involved in since they aim to determine the situation (Şavran, 2009, p. 119). The study consists of two parts as theory and practice. In the first part of the study, the literature related to the study was reviewed, previous research results were examined, and a detailed theoretical frame was formed related to the study subject in terms of variables that can be used with the help of obtained information. In the second part, cognitive flexibility and goal orientation correlation of the students preparing special talent exams was determined using “Cognitive Flexibility Inventory” (CFI) and “Task and Ego Orientation in Sports Questionnaire” (TEOSQ). Also, the demographic information of students was obtained using a demographic information form, and the differences between cognitive flexible behaviors and goal orientation levels were examined in terms of individual variables.

### 2.2 Participants

The study group of the research consists of students preparing for special talent exams in order to study at faculties/schools of higher education of sports of the universities in 2021-2022 academic year predetermined through convenience sampling method (Bishop, 2017). In the literature, it is suggested that when determining the sample size, the number of participants should be five or ten times of the number of items in a scale (Bryman & Cramer, 2001; Pett, Lackey, & Sullivan, 2003). Since there are a total of 33 items/statements in the two scales used in the current study, the study was carried out with 351 students. 180 of the participants were female (51.3%) whereas 171 of the participants were male (48.7%).

### 2.3 Data Collection Tools

The participants were asked to fill out a questionnaire consisting of two parts in the current study. In the first part of the questionnaire, there is a variety of questions consisting of personal information of participants. In the second part, the items of “Cognitive Flexibility Inventory” (CFI) and “Task and Ego Orientation in Sports Questionnaire” (TEOSQ) are included.

**Cognitive Flexibility Inventory (CFI):** The scale was developed by Dennis and Vander Wal (2010) and adapted into Turkish language by Gülüm and Dağ (2012) in order to determine the cognitive flexibility levels of individuals. The scale consists of 20 items and has two subscales (alternatives and control). The scale has five-point Likert as “1-not applicable, 5-applicable”. As the score that can be obtained from the scale increases, the cognitive flexibility increases. Consequently, high scores indicate higher cognitive flexibility.

**Task and Ego Orientation in Sports Questionnaire (TEOSQ):** The scale was developed by Duda and Nicholls (1989, 1992) and adapted into Turkish language by Toros (2004). Task and Ego Orientation in Sports Questionnaire consists of 13 items and has two subscales (task-oriented goals and ego-oriented goals). The scale has five-point Likert as “1- I completely disagree, 5- I completely agree”. Individuals who have task-oriented goals give importance to the process and try to do their best not only during the competition but also during training. On the other hand, individuals who have ego-oriented goals focus on being superior to others, being in a higher position than other and being a roaring success. Ego-oriented goals are the sense of achievement that individuals feel when they obtain superiority against others.

### 2.4 Research Publication Ethics

For the research, the ethical approval of the research has been obtained with the decision of the Scientific Research and Publication Ethics Committee of Alanya Alaaddin Keykubat University, Department of Social and Human Sciences, dated 07.04.2021.

### 2.5 Data Analysis

The data obtained in the current study was analyzed using IBM SPSS 25.0 statistics package program. In order to determine the internal consistencies of the measuring tools, their Cronbach Alpha reliability coefficients were calculated. In terms of various demographics of the participants, t-test, ANOVA and Pearson Correlation tests were carried out to evaluate the CFI and TEOSQ levels. Before the statistical analysis of the obtained data, skewness and kurtosis values of the data are calculated to determine if the data has normal distribution, and it is determined that the data has normal distribution. The significance level was set as  $p < 0.05/p < 0.001$  in the

statistical analysis and evaluation of data.

From this point on, the aim was to determine the correlation between cognitive flexibility and goal orientation levels of the students preparing for the special talent exams for sports as well as to examine the score that the students obtained from the subscales of the scales in terms of variables such as gender, age and high school type.

In the frame of these aims, the following questions were intended to answer:

- Is there a significant correlation between CFI and TEOSQ scores of the study group?
- Is there a significant different in terms of gender variable in the CFI and TEOSQ scores of the study group?
- Is there a significant different in terms of age variable in the CFI and TEOSQ scores of the study group?
- Is there a significant different in terms of high school type variable in the CFI and TEOSQ scores of the study group?

### 3. Findings

In this section, first of all, the table showing the frequency distribution of the study group's demographics was presented. Next, respectively, the table showing the scale score distribution, the table showing the correlation between cognitive flexibility and goal orientations of the participants, the table showing the differences of cognitive flexibility and goal orientation of the participants in terms of demographics (gender, age and high school type) were presented.

Table 1. Frequency distribution of the participants in terms of demographics

Variable	Category	N	%	Total
Gender	Female	180	51.3	351
	Male	171	48.7	
Age	17-19 age	247	70.4	351
	20-22 age	80	22.8	
	23 ≤ age or over	24	6.8	
High school	Sports high school	69	19.7	351
	Other high school	282	80.3	

It is determined that 51.3% of the participants are female, 70.4% are in "17-19" age group and 80.3% are in "high schools other than sports high schools" group.

Table 2. Distribution of CFI and TEOSQ scores

Scales	Item	Mean	Sd	Skewness	Kurtosis	C.Alpha
Alternatives	13	4.03	0.618	-0.572	0.198	0.89
Control	7	3.48	0.836	-0.218	-0.533	0.82
CFI (Total)	20	3.60	0.462	-0.274	1.317	0.87
Task-oriented goals	7	3.78	0.804	-0.535	-0.152	0.86
Ego-oriented goals	6	3.47	0.825	-0.262	0.044	0.79
TEOSQ (Total)	13	3.64	0.715	-0.320	0.328	0.88

When the mean scores that the participants obtained from CFI's two subscales were examined, it was seen that the highest mean score was in the "alternatives" subscale (4.03). It was also seen that Cronbach Alpha internal consistency coefficient was between 0.89 and 0.82 for the subscales. Cronbach Alpha internal consistency coefficient was calculated as 0.87 for the total CFI. When the mean scores that the participants obtained from TEOSQ's two subscales were examined, it is seen that the highest mean score was in the "task orientation" subscale (3.78). It was also seen that Cronbach Alpha internal consistency coefficient was between 0.86 and 0.79 for the subscales. Cronbach Alpha internal consistency coefficient was calculated as 0.88 for the total TEOSQ.

When the skewness and kurtosis values were examined, it was seen that the data showed normal distribution. To Tabachnick and Fidell (2007), the skewness and kurtosis value of  $\pm 1.50$  can be accepted as normal whereas George and Mallery (2010) suggest  $\pm 2$ . Therefore, it was decided to use parametrical statistical techniques for the correlation and difference analyses.

Table 3. Pearson correlation analysis results presenting the correlation between CFI and TEOSQ

		Task-oriented goals	Ego-oriented goals
CFI (Total)	R	0.387**	0.242**
	p	0.000	0.000
	n	351	351

\*\*p<0.01.

When Table 3 was examined, it was determined that there was a positive and significant correlation between “task-oriented goals” and “ego-oriented goals” (p<0.01). Thus, it can be said that as the cognitive flexibility increases, task and ego-oriented goals increase as well.

Table 4. T-Test analysis results for gender variable

Scales	Female (180)		Male (171)		t	p
	Mean	Sd	Mean	Sd		
Alternatives	4.03	0.605	4.03	0.633	0.097	0.922
Control	3.55	0.810	3.40	0.859	1.689	0.092
CFI (Total)	3.58	0.422	3.62	0.501	-0.783	0.434
Task-oriented goals	3.79	0.831	3.77	0.777	0.233	0.816
Ego-oriented goals	3.40	0.825	3.54	0.820	-1.635	0.103
TEOSQ (Total)	3.61	0.721	3.67	0.710	-0.726	0.468

\* p<0.05.

The analysis indicated that there is no statistically significant difference in terms of gender variable in the “alternatives” (t=0.097, p>0.05) and “control” (t=1.689, p>0.05) subscales and in total mean score of CFI (t=-0.783, p>0.05). In addition, it was also seen that there is no statistically significant difference in terms of gender variable in the “task orientation” (t=0.233, p>0.05) and “ego orientation” (t=-1.635, p>0.05) subscales and in total mean score of TEOSQ (t=-0.726, p>0.05).

Table 5. ANOVA analysis results for age variable

Scales	17-19 age (247)		20-22 age (80)		23 ≤ age (24)		F	p
	Ort.	Ss	Ort.	Ss	Ort.	Ss		
Alternatives	3.99	0.637	4.10	0.568	4.23	0.521	2.487	0.085
Control	3.48	0.844	3.37	0.774	3.83	0.886	2.847	0.059
CFI (Total)	3.57	0.471	3.68	0.487	3.63	0.179	1.650	0.194
Task-oriented goals	3.81	0.768	3.67	0.924	3.88	0.738	1.082	0.340
Ego-oriented goals	3.47	0.797	3.52	0.886	3.23	0.893	1.184	0.307
TEOSQ (Total)	3.65	0.679	3.60	0.815	3.58	0.749	0.242	0.785

\* p<0.05.

ANOVA test results showed that there is no statistically significant difference in terms of age variable in the “alternatives” (F=2.487, p>0.05) and “control” (F=2.847, p>0.05) subscales and in total mean score of CFI (F=1.650, p>0.05). Also, it was seen that there is no statistically significant difference in terms of age variable in the “task orientation” (F=1.082, p>0.05) and “ego orientation” (F=1.184, p>0.05) subscales and in total mean score of TEOSQ (F=0.242, p>0.05).

Table 6. T-Test analysis results for high school type variable

Scales	Sports high school (69)		Other high schools (282)		t	p
	Ort.	Ss	Ort.	Ss		
Alternatives	3.99	0.673	4.04	0.604	-0.561	0.575
Control	3.26	0.826	3.54	0.831	-2.500	0.013*
CFI (Total)	3.64	0.466	3.59	0.461	0.915	0.361
Task-oriented goals	3.67	0.814	3.81	0.801	-1.352	0.77
Ego-oriented goals	3.76	0.757	3.39	0.826	3.370	0.001*
TEOSQ (Total)	3.71	0.702	3.62	0.719	0.949	0.343

\*  $p < 0.05$ .

According to high school type the participants had studied, there is no statistically significant difference in terms of high school type variable in the “alternatives” ( $t = -0.561$ ,  $p > 0.05$ ) subscale and in total mean score of CFI ( $t = 0.915$ ,  $p > 0.05$ ); however, there is a significant difference in the “control” ( $t = -2.500$ ,  $p < 0.05$ ) subscale mean score. Hereunder, the participants who had studied at high schools other than sports high school had higher mean scores when compared to the participants who had studied at sports high schools in terms of control subscale. Additionally, it was seen that there is no statistically significant difference in terms of age variable in the “task orientation” ( $t = -1.352$ ,  $p > 0.05$ ) subscale and in total mean score of TEOSQ ( $t = 0.949$ ,  $p > 0.05$ ); however, there is a significant difference in the “ego orientation” ( $t = 3.370$ ,  $p < 0.05$ ) subscale mean score. Hereunder, the participants who had studied at sports high schools had higher scores in the ego orientation when compared to the participants who had studied at high schools other than sports high school.

#### 4. Discussion and Conclusion

As a result of the current study, it was determined that there was a positive and significant correlation between cognitive flexibility and task-oriented goals and ego-oriented goals. When the mean scores that the participants obtained for cognitive flexibility were examined, it was seen that the highest mean scores were found in “alternatives” subscale. When this result is considered, it can be concluded that the participant students are successful at making use of different alternatives and being aware of the alternative solutions in terms of coping with the difficult situations when they explain the situations they face and behaviors people display. In case they encounter different problems, they can perform alternative behaviors leading to solution and success. When the mean scores of another point in the current study, that is, goal orientation were examined, it was seen that the highest mean scores belonged to task-oriented goals subscale. Hereunder, the students preparing for the special talents exam mostly care about their own improvement rather than surpassing others. Individuals try to improve their skills, coordination and talents to gain sport-related achievements that they designated. They wish to improve themselves in their designated field and increase their skill levels. To Weinberg & Gould (2015, pp. 64-65), some individuals can both be driven by task and by ego. That is to say, an athlete may both want to win and want to obtain his/her personal best. However, the literature shows that individuals usually tend to focus on being either task or ego-oriented which is the same in the current study.

Nevertheless, it was seen that there is a significant difference in the control subscale of cognitive flexibility and in the ego orientation subscale of goal orientation in terms of high school type variable. Hereunder, the participants who had studied at high schools other than sports high school had higher mean scores when compared to the participants who had studied at sports high schools in terms of control subscale. Accordingly, it was concluded that the participants who had studied at high schools other than sports high school are more in control under challenging circumstances when compared to the participants who had studied at sports high schools. It can be said that the fact that students graduated from sports high schools have certain special talents and skills does not provide them with the advantage in terms of bring challenging conditions under control. On the other hand, when the findings related to goal orientation were examined, it was seen that mean scores of ego orientation subscale differed significantly. Hereunder, it was determined that the participants who had studied at sports high schools had higher scores in the ego orientation when compared to the participants who had studied at high schools other than sports high school. This result indicates that the students graduated from sports high schools focuses on results rather than the process when preparing for the special talent exams, and that they deem being more successful than the other individuals as more important. In the study in which Öcal Karaç et al. (2020) examined young female handball players’ goal orientation in terms of different variables, it was found that task orientation means of high school students were higher when compared to ego orientation mean scores. On the other hand, when Zahal’s (2014) study on cognitive flexibility of the special talent exam candidates was

examined, it was seen that there was no significant correlation between high school type and cognitive flexibility scores. In the study of İřçiođlu (2020), the researchers concluded that flexible thinking skill depends on different dynamics when they found that there weren't great differences between cognitive flexibility scores although there were differences between high school types.

As a result of the analysis carried out in terms of age and gender, it was seen that there was no significant difference in cognitive flexibility and goal orientation. This indicates that age and gender variables do not have an effect on the cognitive flexibility and goal orientation of the students preparing for the special talent exams. In the study where Zahal (2014) examines cognitive flexibility of the students taking the special talent exams, it was determined that there was no significant correlation between gender and age variables and the cognitive flexibility scores. In the study on elite tennis players by Balkis (2019), similar results to the current study were obtained; that is, it was determined that there was no significant difference in terms of gender variable in the subscales of goal orientation scale. In the same study, when Balkis (2019) examined the age variable, it was determined that there were significant differences in the goal orientations of the tennis player participants. According to the obtained results, 10 years and below age group participants had significantly lower scores in terms of task orientation when compared to 15-16 age group whereas 10 years and below age group participants had significantly higher scores in terms of ego orientation when compared to 15-16 age group. Li et al. (1996) concluded in their study on students studying physical education that the task orientation subscale of goal orientation did not differ significantly in terms of gender variable; however, the ego orientation subscale of goal orientation differed significantly in favor of male participants. Duda et al. (1995) revealed in their study on individuals involved in tennis that there were significant differences in terms of gender, and that female participants had significantly higher scores from task orientation subscale when compared to male participants. In a similar study of Duda (1998) on participants doing individual and team sports at university and high school, it was revealed that there were significant differences between female and male students. According to the study, it was determined that females were more task oriented compared to males whereas males were more ego oriented compared to females. On the other hand, Altıntaş and Bayar Koruç (2010) analyzed the goal orientation of athletes in terms of gender and found out that female athletes had higher scores from both task and ego orientation scores compared to males. Altıntaş and Bayar Koruç (2010) concluded that females obtained higher scores from goal orientation subscale due to the variety of sport branches between the genders. They determined that females mostly played handball and volleyball which are accepted as female sports in Turkish culture, and which are mostly played by females since they feel more successful playing them; thus, the scores resulted in favor of females. Kilpatrick et al. (2003, p. 130) concluded in their study which was analyzed in terms of age and gender that female participants were driven by task orientation in terms of exercise whereas male participants were driven by ego orientation.

## 5. Suggestions

As a result of the positive correlation between cognitive flexibility and goal orientation of the student candidates, it can be said that the movement skills in the process of preparing for the special talent exam contribute to the cognitive flexibility and goal orientation. Consequently, the coaches can provide with contributions related to increasing cognitive flexibility during individual preparations or group preparations. Similarly, coaches can express the development of task and ego orientation processes and explain what type of orientation can be advantageous or disadvantageous using scientific information. When the differences between high school types are considered, the importance of the sports psychology lessons at sports high schools and the subjects related to sports psychology that is taught within the physical education lessons can be emphasized, and their contribution to the exam success and daily life can be explained. The student candidates may be led to choose departments in the light of their goal orientation; it is thought that the students with ego-oriented goals may choose coaching education department since they can raise athletes who believe in themselves and who focus on the success. Finally, it can be suggested that future research may be carried out with studies in which the academic achievements of these student athletes are also included, and the research subject can be associated with achievement in the light of this.

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