

## An analysis of the metacognitive awareness levels of students in Firat University's department of sports sciences according to their program types and grades

**Cemal Gundogdu\***, Department of Sports Management, School of physical education and sports, Inonu University, 44210 Battalgazi/Malatya

**Evrin Celebi**, Department of Midwifery, Faculty of Health Sciences, Firat University, 23119 Elazığ/Turkiye

### Suggested Citation

Gundogdu, C. & Celebi, E. (2017). An analysis of the metacognitive awareness levels of students in Firat University's department of sports sciences according to their program types and grades. *International Journal of Learning and Teaching*. 9(2), 285-290.

Received November 17, 2016; revised January 21, 2017; accepted April 14, 2017.

Selection and peer review under responsibility of Prof. Dr. Hafize Keser, Ankara University, Ankara, Turkey.

©2017 SciencePark Research, Organization & Counseling. All rights reserved.

### Abstract

This descriptive study aims to identify the metacognitive awareness levels of the students in the Faculty of Sports. The population consists of 854 students receiving daytime and evening education in the Sports Faculty of Firat University. No sampling was done, and 684 students (80.1 %) were reached. The data were collected with the Metacognitive Awareness Inventory (MAI) and a personal information sheet. The mean score for the knowledge of cognition dimension of the evening education (type of course) students ( $64.2 \pm 10.2$ ) was found to be significantly higher than that of the daytime students ( $61.5 \pm 10.2$ ) ( $p < 0.05$ ). The mean score for the knowledge of cognition dimension of the freshmen students ( $64.1 \pm 9.5$ ) was higher than that of the other students' ( $p < 0.05$ ). There was no significant difference between the MAI and its dimensions and the parental education level, and parental occupation.

Keywords: Metacognition, metacognitive awareness, student.

---

\*ADDRESS FOR CORRESPONDENCE: **Cemal Gundogdu**, Department of Sports Management, School of physical education and sports, Inonu University, 44210 Battalgazi/Malatya.

E-mail address: [cemal.gundogdu@inonu.edu.tr](mailto:cemal.gundogdu@inonu.edu.tr)

## 1. Introduction

The concept of cognition in the educational sciences literature can be briefly described as knowing and being aware. Cognitive theory regards the student as being able to control and structure their own learning instead of being passive. This approach drew attention to the internal characteristics of students in this process and as a result, some concepts such as self-learning and effective learning gained more importance. The concept of metacognition then emerged. It is related to the assumption that this competence helps individuals acquire the skill of self-learning. While cognition is being aware of and understanding something, metacognition is being aware of how you learn something in addition to learning and understanding it. Cognition includes perceiving, understanding, remembering and other similar mental processes. Metacognition includes thinking about one's own mental processes involved in cognition (Karakelle & Sarac, 2010; Senemoglu, 2007; Akpunar, 2011).

Flavell used the term, metamemory, in one of his studies in 1976. Then he developed and restructured this concept and started to use metacognition, by which he meant, "an individual's control over their own learning and mnemonic processes" (Akpunar, 2011). According to Flavell, metacognition consists of two principal components: the knowledge of cognition and the regulation of cognition. In time, this classification was further developed by researchers and its subcomponents were identified. The knowledge of cognition consists of three sub-processes: descriptive knowledge, methodological knowledge and conditional knowledge. The organization of cognition includes five sub-processes that help individuals to regulate their learning: planning, information management, self-observation, debugging (correction) strategies and organizational skills, including assessment (Demirsoz, 2014).

Metacognition affects the retention of learned knowledge, comprehending, recollection, critical thinking and problem solving. Students are involved in metacognitive processes while they are learning a subject, which includes performing cognitive processes such as problem solving, comprehending, reasoning or interpreting. Through metacognition students use their knowledge in the most productive way and learn effectively (Akcam, 2012).

### 1.1. Aim of the study

This study aims to analyze the metacognitive awareness levels of students in the Faculty of Sports Sciences using a set of variables. This study will determine the deficiencies in students' metacognitive skills and education specialists will take the requisite steps to overcome these deficiencies with the help of its findings.

## 2. Method

### 2.1. Sample

This is a descriptive study. The study population includes 854 students enrolled in Firat University's Faculty of Sports Sciences in daytime and evening education programs in 2014 Fall semester. The participating students attended courses regularly. The researcher did not select a sample, but included all students in the sample, reaching 684 students (80.1%).

### 2.2. Data Collection Tools

The data were collected using a personal information form created by the researchers and the Metacognitive Awareness Inventory (MAI). The personal information form included questions on age, gender, year of study, type of education, parental educational status and occupations. The Metacognitive Awareness Inventory (MAI) was created by Schraw and Dennison (1994) and was translated into Turkish by Akin, Cetin and Abaci (2007). The inventory includes two sub-dimensions, the knowledge of cognition and the regulation of cognition, along with eight sub-scales. The

knowledge of cognition sub-dimension consists of three sub-scales: procedural knowledge, declarative knowledge and conditional knowledge. The regulation of knowledge sub-dimension consists of five sub-scales: planning, comprehension monitoring, evaluation, debugging strategies and information management. The inventory includes 52 5-point Likert type questions. Possible scores on the inventory range from 52 to 260. The higher scores point to an advanced level of metacognitive awareness. The forms were distributed to the students in the classroom, and they were observed while answering the questions. The survey was conducted after written consent was received from Firat University Non-Invasive Research Ethics Committee Directorship.

### 2.3. Analysis

The data were analyzed as numbers, mean scores and percentages. An independent samples t-test and ANOVA were used. Cronbach's  $\alpha$  for the entire scale was found to be 0.94. It was 0.86 for the knowledge of cognition sub-dimension and 0.91 for the regulation of cognition sub-dimension.

### 3. Results

The majority of the participating students (59.5%) are between 20 and 23 years age, and 64.2% are male. Of their mothers, 45.9% had not finished their primary education, and 95% do not work. Of their fathers, 33.3% are high school and university graduates, and 43% do not work (Table 1).

Table 1. Distribution of Students According to Their Demographic Characteristics

Features	N	%
Age		
19 years old and under	125	18.3
20-23 years old	407	59.5
24 years old and over	152	22.2
Gender		
Female	245	35.8
Male	439	64.2
Maternal Education Status		
Not completed primary school	314	45.9
Primary school	201	29.4
Secondary school	94	13.7
High school and over	75	11.0
Parental Education Status		
Not completed primary school	99	14.5
Primary school	172	25.1
Secondary school	185	27.1
High school and over	228	33.3
Mother's work status		
Not working	650	95.0
Working	34	5.0
Father's occupation		
Official	90	13.2
Worker	147	21.5
Self-employment	153	22.4
Not working	294	43.0

Of the students, 61.1% attend daytime classes, and 38.9% attend evening classes. Of them, 24.3% freshmen, 25.9% are sophomores, 24.4% are juniors, and 25.4% are seniors.

Table 2. Distribution of Mean Scores on the MAI and its Sub-dimensions by Gender, Program Type and Class

Variables	Knowledge of cognition		Regulation of cognition		MAI	
	Mean±SD	p	Mean±SD	p	Total Mean±SD	p
Gender						
Female	62.5±10.4	0.855	128.1±19.4	0.361	190.6±28.8	0.579
Male	62.6±10.2		126.6±19.8		189.3±29.1	
Program Type						
Daytime education	61.5±10.2	0.001	127.0±19.5	0.766	188.5±28.8	0.163
Evening Education	64.2±10.1		127.4±19.9		191.7±29.2	
Class						
First year	64.1±9.5		130.3±19.5		194.4±28.2	
Second year	61.1±10.1	0.042	124.8±19.6	0.082	185.9±28.5	0.057
Third year	63.2±10.3		127.1±18.1		190.3±27.5	
Fourth year	62.2±10.3		126.7±21.1		188.9±31.2	

The students' sub-dimension scores on the knowledge of cognition and the regulation of Cognition" and their MAI total mean scores do not vary according to gender ( $p>0.05$ ). Mean score of the students in evening education program on the knowledge of cognition sub-dimension ( $64.2\pm10.2$ ) is significantly higher than that of the students in daytime education program ( $61.5\pm10.2$ ) ( $p<0.05$ ). Mean score of the first-year students on the knowledge of cognition sub-dimension ( $64.1\pm9.5$ ) is higher than the mean score of the students in other class ( $p<0.05$ , Table 2).

Table 3. Distribution of Students' Scores on the Knowledge of Cognition Sub-dimension According to Gender, Program Type and Class

Variables	Knowledge of Cognition		
	Declarative knowledge	Procedural knowledge	Conditional knowledge
	Mean±SD	Mean±SD	Mean±SD
Gender			
Female	26.2±4.3	13.9±3.1	22.2±4.3
Male	26.1±4.8	14.1±2.7	22.3±4.1
P	0.785	0.348	0.905
Program type			
Daytime education	25.7±4.6	13.9±2.8	21.9±4.2
Evening Education	26.9±4.5	14.4±2.8	22.8±4.1
p	0.000	0.020	0.005
Class			
First year	26.7±4.3	14.5±2.6	22.7±4.0
Second year	25.6±4.3	13.6±2.8*	21.7±4.4
Third year	26.5±4.5	14.1±2.8	22.5±4.1
Fourth year	25.9±5.3	14.2±2.8	22.1±4.1
p	0.107	0.031	0.087

Students' mean scores on declarative knowledge, procedural knowledge and conditional knowledge sub-scales do not vary according to gender ( $p<0.05$ ). Regarding program type, evening students' scores on the declarative knowledge, procedural knowledge and conditional knowledge sub-scales are higher than those of the daytime students ( $p<0.05$ ). Regarding students' years of study; second-year students' scores on the procedural knowledge sub-scale is lower than that of the students in other class ( $p<0.05$ , Table 3).

Table 4. Distribution of Students' Scores on the Regulation of Cognition Sub-dimension by Gender, Program Type and Class

Variables	Regulation of Knowledge				
	Planning Mean±SD	Monitoring Mean±SD	Evaluation Mean±SD	Debugging strategies Mean±SD	Information management Mean±SD
Gender					
Female	25.8±4.5	29.2±5.0	22.2±4.0	17.8±3.3	32.9±5.4
Male	25.5±4.6	29.0±5.0	21.8±3.9	17.6±3.4	32.6±5.6
P	0.431	0.574	0.166	0.370	0.590
Program Type					
Daytime education	25.7±4.5	29.1±5.1	22.1±3.8	17.6±3.3	32.5±5.5
Evening Education	25.1±4.6	29.2±4.8	21.7±4.1	17.7±3.5	33.1±5.6
p	0.846	0.642	0.187	0.801	0.115
Class					
First year	25.9±4.7	30.3±4.5*	22.6±3.8	18.1±3.4	33.2±5.7
Second year	25.4±4.5	28.2±5.0	21.6±4.1	17.2±3.4	32.2±5.3
Third year	25.8±4.2	28.7±5.0	21.8±3.5	17.6±3.5	33.1±5.1
Fourth year	25.5±4.8	29.2±5.2	21.7±4.3	17.7±3.4	32.4±5.9
p	0.725	0.001	0.083	0.167	0.314

Students' mean scores on the regulation of cognition sub-scale do not vary by to gender or program type ( $p>0.05$ ; Table 4). The freshmen's mean score on the comprehension monitoring sub-scale is significantly different from that of students in other class ( $p<0.05$ ; Table 4).

Parental educational status and occupation do not influence their metacognitive awareness levels ( $p>0.05$ ).

#### 4. Discussion, Conclusion and Recommendations

The distribution of students by gender indicates that there are more male students than female students. An analysis of the students' MAI scores by gender shows that it does not influence metacognitive awareness. The findings of studies by Deniz, Kucuk, Cansiz, Akgun and Isleyen (2014), Ozsoy and Gunindi (2011), Yildirim (2010), Kiskir (2011), Cihanoglu (2012) and Memnun and Akkaya (2009) support this findings. There are also some studies that attained different results. In studies by Akyolcu (2013), Kiremitci (2013) and Nazik, Sonmez and Gunes (2014), the results are to the benefit of male students, while in Gocer's (2014), Demir's (2011) and Akcam's (2012) studies, the results are to the benefit of female students.

A comparison of students' scores on MAI and it sub-dimensions by program type indicate that students in the evening program had significantly higher scores than daytime program students on the knowledge of cognition sub-dimension. This contradicts the common idea that students in the evening program have lower metacognitive awareness. A study by Cihanoglu (2012) found any correlation between program type and metacognitive awareness.

An analysis of metacognitive awareness by year of study shows that sophomores obtained significantly lower scores on the procedural knowledge sub-scale of the regulation of cognition sub-dimension. In their study, Ayazgok and Yalcin (2014) found that sophomore students had the lowest scores on the procedural knowledge sub-scale. A study by Deniz (2014) indicated that second-year students obtained the lowest scores on the knowledge of cognition and the regulation of cognition sub-dimensions. This is a similar, though not significant, finding. A study by Alci and Yuksel (2012) determined that third and fourth-year students have advanced levels of metacognitive awareness. In the study by Baysal (2013), the outcomes in the knowledge of cognition sub-dimension are to the benefit of senior year students, while Nazik et al. (2014) study found no significant correlation between year of study and metacognition.

This study's outcomes show that:

- Metacognitive awareness does not vary significantly by gender.
- Students in the evening program have higher levels of metacognitive awareness than students in the daytime program.
- Second-year students have the lowest mean score on the procedural knowledge sub-scale.
- The educational statuses and occupations of the students' parents do not influence their metacognitive awareness.

These results suggest that students be provided with suitable environments to improve their metacognitive awareness.

## References

- Akcam, S. (2012). *Investigation of 6, 7 and 8 grade students' levels of metacognitive awareness* (Unpublished Master Thesis). Dokuz Eylul University Institute of Education Sciences, Izmir, Turkey.
- Akpunar, B. (2011) The analysis of the concepts of cognition and metacognition in terms of the philosophy of mind *Turkish Studies - International Periodical For The Languages, Literature and History Of Turkish Or Turkic* 6, 4353-365.
- Akyolcu, R. (2013). *An investigating of metacognitive awareness and academic achievement among the department of art teaching students* (Unpublished Master Thesis), Gazi University Institute of Education Sciences, Ankara, Turkey.
- Alci, B., & Yuksel, G. (2012) An Examination Into Self-Efficacy, Metacognition and Academic Performance of Pre-Service ELT Students: Prediction and Difference, *Pen Journal of Education and Human Sciences*, 2(1), 143-165.
- Ayazgok, B., & Yalcin, N. (2014) The Investigation Of The Metacognitive Awareness and The Academic Achievement About Simple Machine In 7th Grade Students In Primary Education. *Procedia - Social and Behavioral Sciences*, 141, 774 – 780.
- Baysal, N., Ayvaz, A., Cekirdekci, S., & Malbelegi, F. (2013). An analysis of metacognitive awareness of preservice elementary classroom teachers in terms of various variables *M.U. Ataturk Education Faculty Education Sciences Journal*, 37,68-81.
- Cihanoglu, M. O. (2012) Metacognitive awareness of teacher candidates. *Procedia - Social and Behavioral Sciences* 46, 4529 – 4533.
- Demir, O., & Ozmen, S. K. (2011) An investigation of university students' metacognition levels in terms of various variables. *C.U. Journal of Social Sciences Institute*, 20(3), 145-160
- Demirsoz, E. S. (2014) Metacognitive Awareness and Its Developing. *Trakya University Journal of Education*, 4(2), 112-123.
- Deniz, D., Kucuk, B., Cansiz, S., Akgun, L., & Isleyen, T. (2014) Examining metacognitive awareness of prospective secondary school mathematics teachers in terms of some variables. *Kastamonu Education Journal*, 22(1),305-320.
- Gocer, T. (2014) *Investigation of the relationship between pre-service science teachers' metacognitive awareness with logical thinking skills and academic achievements* (Unpublished master thesis). Gazi University Institute of Education Sciences, Ankara, Turkey.
- Karakelle, S., & Sarac, S. (2010). A Review on the metacognition: Metacognition work or is metacognition approach? *Turkish Psychological Articles*, 13(26), 45-60.
- Kiremitci, O. (2013). An Investigation on Metacognitive Awareness Levels of School of Physical Education and Sport Students. *Pamukkale Journal of Sport Science*, 4(3), 29-40.
- Kiskir, G. (2011). *Investigation of the relationship between metacognitive awareness levels and problem solving skills of prospective teachers* (Unpublished Master Thesis), Ataturk University Institute of Education Sciences, Erzurum, Turkey.
- Memnun, D. S., & Akaya, R. (2009) The levels of metacognitive awareness of primary teacher trainees *Procedia Social and Behavioral Sciences*, 1, 1919-1923.
- Nazik, F., Sonmez, M., & Gunes, G. (2014). The Investigation of Metacognition Levels in Nursing Students to Some Variables. *Anatolian Journal of Nursing and Health Sciences*, 17(3), 145-150.
- Ozsoy, G., & Gunindi, Y. (2011). Prospective preschool teachers' metacognitive awareness *Elementary Education Online*, 10(2), 430-440.
- Senemoglu, N. (2007). *Development, Learning and Teaching: From theory to practice* (13<sup>th</sup> ed). Ankara: Gonul Publisher.
- Yildirim, S. (2010). *The relationship between university students? Metacognitive awareness and solving similar type of mathematical problems* (Unpublished Master Thesis), Gaziosmanpasa University Institute of Social Sciences. Tokat, Turkey.