

The Effect of Intrapersonal Intelligence of Sports Sciences Faculty Students on Metacognitive Awareness

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Abstract

The aim of the research is to investigate the effect of intrapersonal intelligence profiles of students studying at Faculty of Sport Sciences on their metacognitive awareness levels. General screening and relational screening models were used. The research group consisted of 308 students studying at Afyon Kocatepe University Faculty of Sport Sciences in the 2021-2022 academic year. In the research, Intrapersonal Intelligence part of the "Self-Assessment Inventory in Multiple Intelligence Domains" and "Metacognitive Awareness Inventory" were used as data collection tools. Frequency values, percentage values, one-way variance analysis "ANOVA" test, Independent Samples *t*-test, and "Tukey HSD test" were used for data analysis. In addition, Correlation and Regression tests were applied to determine the relationships between intrapersonal intelligence and metacognitive awareness levels. In conclusion, significant differences were found between the students' intrapersonal intelligence and metacognitive awareness levels and the procedural knowledge sub-dimension, according to the gender variable. According to the department variable, there were found significant differences between the sub-scales of planning, monitoring, and managing knowledge and the intrapersonal intelligence means, however there weren't seen significant differences according to the branch variable. In the correlation and regression tests, it was seen a positive and significant relationship between the level of intrapersonal intelligence and the sub-scales of metacognitive awareness.

Keywords: Metacognitive Awareness, Intrapersonal Intelligence, Student, Sport, University.

INTRODUCTION

Learning is a concept that has been continued, developed, and studied throughout human history. There is no quota for learning. A person constantly learns something from birth until death. In infancy, one discovers, recognizes, feels, tastes the beings and objects around him/her, that is to say, the individual experiences them. As he interacts with the people around him, he learns to speak and communicate, and after that, the stage in which learning spreads over a wide area begins. What they learn from their family, friends, school, and social media environment leads to permanent behavioral changes in the individual. The individual interprets and applies these behavioral changes according to one self.

It is necessary to assimilate, develop and realize a learned phenomenon. One should ask oneself these questions; “why did I learn this?”, “how can I improve this?”, “where can I apply what I have learned?”. If a learned skill, fact, or concept is questioned during or at the end of the learning process, it becomes more permanent and qualified (Bedel & Çakır, 2013; Sellars, 2006). This questioning enables the individual to evaluate oneself, to know oneself and to reach a self-knowledge about what one can do. Flavell was the first person to express this self-knowledge in the modern sense, which dates back to the ancient wisdom of Socrates (Akçam, 2012). Flavell (1976) referred to this situation as metacognition and defined it as evaluating learning, monitoring comprehension, and controlling cognitive processes by performing self-control. Hacker and Dunlosky (2003) interpreted metacognition as individuals’ being aware of their cognitive capacity within the processes of perception, remembering and thinking and being able to control these processes.

Individuals with metacognitive awareness display talents such as planning, selecting strategies, monitoring the learning process, correcting mistakes, determining whether the strategies used are effective, and adjusting learning methods and strategies as needed (Selçioğlu- Demirsöz, 2010; Selçioğlu- Demirsöz, 2014; Slavin, 2003; Özsoy, 2006). Therefore, an essential aspect of metacognition for university students is that they know their cognition and can use this knowledge by customizing it in the context of learning (Sellars, 2006). In addition, Schraw and Sperling-Dennison (1994) underlined that the individual can acquire cross-cognitive awareness of planning, sorting, monitoring, and evaluating skills as well as improved practice techniques that would enhance their performance. The importance of sustaining this viewpoint in the context of one’s capacity to think, comprehend, and manage one’s learning was also underlined by Schraw and Sperling-Dennison (1994). An individual can achieve planning, sequencing, monitoring, evaluation, and better application skills that will increase his/her performance with metacognitive awareness. In addition, Gelen (2004) stated that metacognition forms the basis of thinking and covers all thinking skills.

The more the individual knows, the more effectively he can evaluate his learning, plan the most effective learning paths, and control the learning time. The “Theory of Multiple Intelligences” by Howard Gardner is another useful theory for identifying the individual (Gardner, 1983). Based on this knowledge, the Theory of Multiple Intelligences predicts that there exists a link between the realm of metacognitive awareness and intrapersonal intelligence (Karakelle, 2012; Invincible and Hardworking, 2011). According to Morgan (1996), intelligence is one of the metacognitive styles and affects performance. This is in line with the hypothesis of multiple intelligences.

The capability to access one’s emotional life or emotional spectrum is referred to as intrapersonal intelligence. One way to comprehend and exert control over one’s behavior is to be able to quickly identify and eventually describe these emotions, as well as to codify and use them symbolically (Gardner, 1993). Individuals with solid intrapersonal intelligence are fond of their freedom and like to be alone. They enjoy working individually, making their plan, and evaluating it. He can recognize his emotions, control them, and know when to take action (Altan, 2011). In short, they need personal studies and self-awareness when learning (Bümen, 2004; Tunc, 2008).

It is critical in the research to assess people’s intrapersonal intelligence and level of metacognitive awareness in terms of education and training. In the literature, we focus on metacognitive awareness (Gölünük-Başpınar and Ziyagil, 2019; Mulyadi, 2016; Idawati et al., 2020; Kader-Yanık and Afat, 2022) and internal intelligence (STĂNESCU and TOMESCU, 2020; Şuruba-Rusen et al., 2020), however, there hasn’t been any study that looks at how intrapersonal intelligence and metacognitive awareness are related. Therefore, the study’s goal was to examine the impact of the internal intelligence profiles of the students studying at faculty of sports sciences on their levels of metacognitive awareness.

METHOD

RESEARCH DESIGN

The goal of the study was to decide the intrapersonal intelligence areas and metacognitive awareness levels

of the Faculty of Sport Sciences students according to some factors (gender, department, and branch) and to investigate the impact of intrapersonal intelligence on metacognitive awareness. As a result, one of the quantitative research methodologies, the general and relational research model, was applied in the study for this objective. General screening models are research that aim to reach general information about the universe, which deals with the whole universe, or which are conducted on a group selected from the universe (Karasar, 2009). To ascertain the link between variables, research is conducted utilizing a relational screening approach (Büyüköztürk et al., 2018; Karasar, 2009).

RESEARCH GROUP

In the academic year 2021–2022, 308 students from the Faculty of Sport Sciences at Afyon Kocatepe University made up the research group and were selected by simple random sample method.

Table 1 Demographic Distribution

VARIABLES		N	%
GENDER	FEMALE	145	47.1
	MALE	163	52.9
DEPARTMENT	PHYSICALEDUCATIONAND SPORTS TEACHING	121	39.3
	COACHING TRAINING	101	32.8
	RECREATION	86	27.9
BRANCH	TEAM SPORTS	113	36.7
	INDIVIDUAL SPORTS	40	13.0
	NO BRANCH	155	50,3

According to Table 1, 145 (47.1%) of the participants were female and 163 (52.9%) were male. 121 (39.3%) of those were at the department of Physical Education and Sports Teaching, 101 (32.8%) were at the department of Coaching Education and 86 (27.9%) were at the department of Recreation. In addition, the distribution of the participants according to their branches was 113 (36.7%) team sports, 40 (13.0%) individual sports, and 155 (50.3%) no branches.

Ethical Procedures

The “Social and Human Sciences Scientific Research and Publication Ethics Committee” of

Afyon Kocatepe University gave its clearance for this study in a decision dated 24 May 2021 and labeled 2021/224.

DATA COLLECTION TOOLS

The “Metacognitive Awareness Inventory,” created by Schraw and Sperling-Dennison in 1994 and translated into Turkish by Akin, Abacı, and Çetin (2007), as well as the Intrapersonal Intelligence section of Gardner’s “Self-Assessment Inventory in Multiple Intelligence Domains” were utilized in the study. The scales were applied to each participant individually after informing them of the study’s subject.

METACOGNITIVE AWARENESS INVENTORY

Schraw and Sperling-Dennison (1994) created the 52-item Metacognitive Awareness Inventory to measure metacognitive awareness. Inventory items created in a 5-point Likert type were rated as (1) Never (2) Rarely (3) Often (4) Usually and (5) Always. The original form of the inventory consists of eight sub-factors under two main dimensions. The first of the fundamental components, knowledge of cognition, is the understanding of an individual’s cognitive processes, learning techniques, and the circumstances in which those tactics will be most effective. Under the dimension of knowledge of cognition; There are three sub-dimensions: descriptive knowledge, procedural knowledge, and situational knowledge. The expertise of organizing the learning process, utilizing learning techniques, monitoring learning, correcting errors, and assessing learning constitutes the other fundamental feature of cognition regulation. There are five sub-dimensions of regulation of cognition: knowledge management, planning, monitoring, and assessment (Schraw & Sperling-Dennison, 1994).

As a result of the validity and reliability study of the Turkish form of the inventory, the inventory was revealed in the context of 8 sub-dimensions. These sub-dimensions are; “explanatory knowledge”, “situational knowledge”, “planning”, “evaluating”, “procedural knowledge”, “debugging”, “monitoring”, and “managing knowledge”. The Cronbach alpha coefficient of the Turkish version of the inventory is .93 for 52 questions, that is, for

the whole. Within the scope of sub-dimensions, it was reported as .96 for descriptive knowledge, .94 for procedural knowledge, .96 for debugging, .96 for situational knowledge, .96 for monitoring, .97 for evaluation, .95 for planning, and .97 for managing knowledge.

The Cronbach alpha coefficient of this research is .96 for general inventory, and in the context of sub-dimensions, .77 for explanatory knowledge, .62 for procedural knowledge, .71 for situational knowledge, .79 for planning, .78 for monitoring, .78 for evaluation, .71 for debugging, .77 for managing knowledge.

Self-Assessment Inventory in Multiple Intelligence Domains

The 5-point Likert scale “Self-Assessment Inventory in Multiple Intelligence Domains” has eight sub-dimensions. In this study, the “intrapersonal” intelligence part, which is a sub-dimension of the inventory, was applied. There are 10 questions in total in the sub-dimension of intrapersonal intelligence. In addition, inventory items; It is calculated as “0 = Not suitable for me at all, 1 = Not suitable for me, 2 = Suitable for me partially, 3 = Very suitable for me, and 4 = Completely suitable for me”. Those with total intelligence scores between 33 and 40 were reported as very highly developed, between 25 and 32 as highly developed, between 17-24 as moderately developed, between 9 and 16 as slightly developed, and between 0 and 8 as underdeveloped.

DATA ANALYSIS

The demographic features of the participants were given in the study as a frequency (f) and a percentage (%). “Skewness and Kurtosis” values were produced for the data’s normality values and were found to be between ±1.5 after the extreme values were deleted. Thus, it was accepted that the variable distributions were normal (Tabachnick & Fidell, 2013). For this reason, parametric tests were used. The Independent Samples t-Test and One-Way Analysis of Variance “ANOVA” tests were employed in the data analysis, and the “Tukey HSD test” was utilized to assess the differences between the groups. In addition, the link between sub-dimensions was investigated using Pearson’s correlation coefficient test, and multiple linear regression analysis was utilized to determine the impact of students’ internal intelligence on their level of metacognitive awareness. The analysis of the data was carried out with the SPSS 22.00 package program and the statistical results were evaluated at the 95% confidence interval at p<0.05 significance level.

RESULTS

As a result of the normality test, the Skewness and Kurtosis coefficients of the scores of the students from the “Metacognitive Awareness and Self-Assessment in Multiple Intelligence Domains” (internal intelligence sub-dimension) were calculated and it was determined that the values were between -1.5 and +1.5. According to the analysis, it was noted that the data were normally distributed (Tabachnick & Fidell, 2013).

Table 2 Independent Groups t-Test Results of Intrapersonal Intelligence and Metacognitive Awareness Levels of the Students Participating in the Study by Gender Variable

SUB-DIMENSIONS	GENDER	N	\bar{X}	SS	T	P
EXPLANATORY KNOWLEDGE	FEMALE	145	31,4069	3,82153	-.512	.609
	MALE	163	31,6258	3,66176		
PROCEDURAL KNOWLEDGE	FEMALE	145	14,8138	2,13107	-2.286	.023*
	MALE	163	15,3436	1,90963		
SITUATIONAL KNOWLEDGE	FEMALE	145	19,2759	2,64964	-1.245	.214
	MALE	163	19,6442	2,52318		
PLANNING	FEMALE	145	26,5724	3,76892	-.025	.980
	MALE	163	26,5828	3,62743		
MONITORING	FEMALE	145	29,1517	4,30815	-1.257	.210

MONITORING	MALE	163	29,7546	4,07808	-1.257	.210
EVALUATION	FEMALE	145	22,6000	3,23050	-.152	.879
	MALE	163	22,6564	3,28743		
DEBUGGING	FEMALE	145	19,1724	2,75465	.425	.671
	MALE	163	19,0429	2,57325		
MANAGING KNOWLEDGE	FEMALE	145	33,7448	4,45935	.408	.684
	MALE	163	33,5399	4,33368		
INTRAPERSONAL INTELLIGENCE	FEMALE	145	29,4690	3,88561	-.089	.929
	MALE	163	29,5092	4,03437		

*p< .05

Table 3 One-Way Anova Test Results of the Students’ Intrapersonal Intelligence and Metacognitive Awareness Levels by Department Variable

SUB-DIMENSIONS	DEPARTMENT	N	X	SS	SD	F	P
EXPLANATORY KNOWLEDGE	TEACHING	121	31,5868	3,60710	2	,063	,939
	COACHING	101	31,4158	3,96552	305		
	RECREATION	86	31,5581	3,66736	307		
PROCEDURAL KNOWLEDGE	TEACHING	121	15,3802	2,01766	2	2,453	,088
	COACHING	101	15,0396	2,16296	305		
	RECREATION	86	14,7558	1,84669	307		
SITUATIONAL KNOWLEDGE	TEACHING	121	19,7107	2,34676	2	1,805	,166
	COACHING	101	19,5545	2,81594	305		
	RECREATION	86	19,0349	2,60067	307		
PLANNING	TEACHING	121	26,9008	3,57632	2	4,271	,015**
	COACHING	101	27,0198	3,45537	305		
	RECREATION	86	25,6047	3,96241	307		
MONITORING	TEACHING	121	30,1074	3,93447	2	5,837	,003**
	COACHING	101	29,7921	4,19837	305		
	RECREATION	86	28,1977	4,30545	307		
EVALUATION	TEACHING	121	22,6446	3,02726	2	,760	,468
	COACHING	101	22,8911	2,93224	305		
	RECREATION	86	22,3023	3,87775	307		
DEBUGGING	TEACHING	121	19,1901	2,71819	2	,140	,869
	COACHING	101	19,0000	2,43721	305		
	RECREATION	86	19,1047	2,83685	307		
MANAGING KNOWLEDGE	TEACHING	121	34,0579	4,13783	2	4,822	,009**
	COACHING	101	34,1782	4,29510	305		
MANAGING KNOWLEDGE	RECREATION	86	32,4070	4,63840	307	4,822	,009**
INTRAPERSONAL INTELLIGENCE	TEACHING	121	28,5620	4,45513	2	5,707	,004*
	COACHING	101	30,0000	3,55246	305		
	RECREATION	86	30,1977	3,41905	307		

*p< .05

Table 2 shows that there is a significant difference between the mean scores of the students’ responses to the metacognitive awareness inventory in terms of gender variable for the “procedural knowledge”

sub-dimension (p.05); no significant difference was discovered for the other sub-dimensions (p>.05).

As a result of the findings, male students (X=15.34±1.91) expressed more meaningful views than female students (X =14.81±2.13) in the procedural knowledge sub-dimension.

According to Table 3, there was a significant difference between the average scores of the students' answers to the metacognitive awareness inventory regarding the sub-dimensions of "planning" [F(2,305)= 4,271, p<.05], "monitoring" [F(2,305)= 5,837, p<.05], "managing knowledge" [F(4,822)= 3,340 p<.05] in terms of the department variable. Additionally, a statistically significant difference was seen between the responses provided on the self-evaluation survey for the multiple intelligences' "intrapersonal intelligence" sub-dimension [F(2,305)= 5,707 p.05]. In terms of the department variable, no significant difference was discovered in the other sub-dimensions (p>.05).

According to the results of the multiple comparison test, significant differences were found between Teaching (\bar{x} =26.90) and Recreation (\bar{x} =25.60) departments in favor of Teaching (\bar{x} =26.90) department; between the Coaching (\bar{x} =27.02) and

Recreation (\bar{x} =25.60) departments in favor of the Coaching (\bar{x} =27.02) department; according to the "planning" sub-dimension in the examination of the department variable of the students (p).

According to the "Monitoring" sub-dimension, there was a significant difference (p<.05) between Teaching (\bar{x} =30.11) and Recreation (\bar{x} =28.20) departments in favor of Teaching department (\bar{x} =30.11); between the Coaching (\bar{x} =29.79) and Recreation (\bar{x} =28.20) departments in favor of the Coaching departments (\bar{x} =29.79).

According to the sub-dimension of "Managing knowledge", a significant difference (p<.05) was found between Teaching (\bar{x} =34.06) and Recreation (\bar{x} =32.41) departments in favor of Teaching department (\bar{x} =34.06); between the Coaching (\bar{x} =34.18) and Recreation (\bar{x} =32.41) departments in favor of the Coaching department (\bar{x} =34.18).

According to the "internal intelligence" sub-dimension, a significant difference was found between Teaching (\bar{x} =28.56) and Coaching (\bar{x} =30.00) departments, in favor of Coaching department (\bar{x} =30.00); between Teaching (\bar{x} =28.56) and Recreation (\bar{x} =30.20) departments in favor of the Recreation department (\bar{x} =30.20).

Table 4 The Results of the One-Way Anova Test According to the Branch Variable of the Intrapersonal Intelligence and Metacognitive Awareness Levels of the Students Participating in the Research

SUB-DIMENSIONS	BRANCH	N	X	SS	SD	F	P
EXPLANATORY KNOWLEDGE	TEAM SPORTS	113	31,2124	3,79250	2	2,020	,134
	INDIVIDUAL SPORTS	40	30,8250	4,26607	305		
	NO BRANCH	155	31,9290	3,51455	307		
PROCEDURAL KNOWLEDGE	TEAM SPORTS	113	15,3097	2,07485	2	1,238	,292
	INDIVIDUAL SPORTS	40	14,7750	2,39109	305		
	NO BRANCH	155	15,0194	1,89144	307		
SITUATIONAL KNOWLEDGE	TEAM SPORTS	113	19,6195	2,84203	2	,715	,490
	INDIVIDUAL SPORTS	40	19,0500	2,96086	305		
	NO BRANCH	155	19,4710	2,27439	307		
PLANNING	TEAM SPORTS	113	26,4248	3,66890	2	,221	,802
	INDIVIDUAL SPORTS	40	26,4750	4,29661	305		
	NO BRANCH	155	26,7161	3,55249	307		
MONITORING	TEAM SPORTS	113	29,8850	4,30480	2	1,170	,312
	INDIVIDUAL SPORTS	40	28,7750	5,30838	305		
	NO BRANCH	155	29,3484	3,76172	307		

EVALUATION	TEAM SPORTS	113	22,4602	3,34353	2	,537	,585
	INDIVIDUAL SPORTS	40	22,3750	3,62815	305		
	NO BRANCH	155	22,8194	3,09686	307		
DEBUGGING	TEAM SPORTS	113	19,1770	2,71645	2	,826	,439
	INDIVIDUAL SPORTS	40	18,6000	2,83567	305		
	NO BRANCH	155	19,1806	2,56720	307		
MANAGING KNOWLEDGE	TEAM SPORTS	113	33,7168	4,16505	2	1,517	,221
	INDIVIDUAL SPORTS	40	32,5250	4,97165	305		
	NO BRANCH	155	33,8645	4,37240	307		
INTRAPERSONALINTELLIGENCE	TEAM SPORTS	113	29,9204	3,27365	2	1,434	,240
	INDIVIDUAL SPORTS	40	29,7250	3,77568	305		
	NO BRANCH	155	29,1161	4,42096	307		

*p> .05

According to Table 4, there was no significant difference between the mean scores of the students' answers to the metacognitive awareness inventory in terms of the branch variable (p>.05).

Table 5 The Relationship Between Intrapersonal Intelligence and Metacognitive Awareness (Correlation Analysis)

SUB-DIMENSIONS	1	2	3	4	5	6	7	8	9
EXPLANATORYKNOWLEDGE	1								
EXPLANATORYKNOWLEDGE	,376**	1							
PROCEDURALKNOWLEDGE	,337**	,641**	1						
SITUATIONAL KNOWLEDGE	,403**	,727**	,742**	1					
PLANNING	,336**	,752**	,730**	,706**	1				
MONITORING	,336**	,704**	,736**	,755**	,777**	1			
EVALUATION	,426**	,723**	,727**	,759**	,760**	,777**	1		
DEBUGGING	,330**	,594**	,594**	,647**	,645**	,626**	,671**	1	
MANAGING KNOWLEDGE	,369**	,707**	,679**	,734**	,721**	,760**	,793**	,706**	1
MEAN	29,49	31,52	15,09	19,47	26,58	29,47	22,63	19,10	33,63
STANDARD DEVIATION	3,96	3,73	2,03	2,59	3,69	4,20	3,26	2,66	4,39

*p> .05

According to Table 5, when the relationship between intrapersonal intelligence and metacognitive awareness of students is examined, a low positive correlation was found between intrapersonal intelligence and explanatory knowledge (r=.38, p <.05), procedural knowledge (r=.34, p <.05), planning (r=.34, p <.05), monitoring (r=.34, p <.05), debugging (r=.33, p <.05) and managing knowledge (r=.37, p <.05). It was also determined that there was a moderately positive relationship between intrapersonal intelligence and situational knowledge (r=.40, p <.05) and between intrapersonal intelligence and evaluation (r=.43, p <.05).

According to Table 6, the equation of intrapersonal intelligence's prediction of level of metacognitive awareness of students is significant. As a result of the regression analysis, it was noted that there was a positive and significant relationship between intrapersonal intelligence and evaluation (β=.343, p<.05). Therefore, students' intrapersonal intelligence explains 20% of evaluation sub-dimension (R=452; R2=.204; F(8.299) = 9.582, P<.05). Intrapersonal intelligence, however, was found to be a non-significant predictor of explanatory knowledge, procedural knowledge, situational knowledge, planning, monitoring, debugging, and managing knowledge.

Table 6 Intrapersonal Intelligence’s Prediction Level of Metacognitive Awareness (Regression Analysis)

INDEPENDENT VARIABLE	DEPENDENT VARIABLES	B	STANDARDERROR	B	T	P
INTRAPERSONAL INTELLIGENCE	CONSTANT*	15,131	1,882		8,039	,000
	EXPLANATORY KNOWLEDGE*	,121	,094	,114	1,282	,201
	PROCEDURAL KNOWLEDGE*	,005	,173	,003	,029	,977
	SITUATIONAL KNOWLEDGE*	,268	,148	,175	1,807	,072
	PLANNING*	-,062	,107	-,057	-,578	,564
	MONITORING*	-,085	,095	-,090	-,895	,372
	EVALUATION*	,343	,126	,282	2,716	,007**
	DEBUGGING*	,059	,116	,040	,513	,608
	MANAGING KNOWLEDGE*	,015	,090	,017	,167	,868
R=,452	R2=,204	F=9,582		P=,000**		

*p< .05, **p< .001

DISCUSSION AND CONCLUSION

In this study, intrapersonal intelligence and metacognitive awareness levels of Faculty of Sport Sciences students were determined according to variables of gender, department, and branch. In addition, the effect of intrapersonal intelligence, which is the focus of the research, on metacognitive awareness was examined. Following the analysis, it was found that intrapersonal intelligence is an essential predictor of metacognitive awareness, and there is seen a positive, significant relationship between them. Therefore, in this study, it was seen that intrapersonal intelligence positively affected the metacognitive awareness of Faculty of Sport Sciences students.

When table 2 is examined, a significant difference was observed between the participants’ means regarding the “procedural knowledge” sub-dimension in the metacognitive awareness inventory in terms of gender variable (p<.05). Rozendaal, Minnaert & Boekaerts (2003) concluded in their study with secondary vocational education students that female participants use process strategies more in the context of information processing than men. Aktürk and Şahin (2010) found significant differences between the planning, organizing, monitoring, and evaluation sub-dimensions in favor of female participants in their study. Abdelrahman (2020) found significant differences in metacognitive awareness in favor of women in his study. The difference according to gender may be due to individual differences, or it can

be interpreted as a result of the different duties and responsibilities imposed on the genders by hormonal, social, and cultural conditions.

According to table 3, there were seen meaningful differences among the sub-dimensions of “planning,” “monitoring,” and “managing knowledge” in terms of the department variable; according to the “planning” sub-dimension, between teaching (\bar{x} =26.90) and recreation (\bar{x} =25.60) departments in favor of teaching (\bar{x} =26.90) department; between coaching (\bar{x} =27.02) and recreation (\bar{x} =25.60) departments in favor of coaching (\bar{x} =27.02) department; according to “monitoring” sub-dimension, between teaching (\bar{x} =30.11) and recreation (\bar{x} =28.20) departments in favor of teaching (\bar{x} =30.11) department; between coaching (\bar{x} =29.79) and recreation (\bar{x} =28.20) departments in favor of coaching (\bar{x} =29.79) department; according to “knowledge management” sub-dimension between teaching (\bar{x} =34.06) and recreation (\bar{x} =32,41) departments in favor of teaching (\bar{x} =34.06) department; between the coaching (\bar{x} =34.18) and recreation (\bar{x} =32.41) departments in favor of the coaching (\bar{x} =34.18) department. Kaplan (2021), in his study comparing the students studying at the Faculty of Fine Arts and the students studying at the School of Physical Education and Sports, found significant differences in favor of the students of the Faculty of Fine Arts. Bakioğlu, Küçükaydın & Karamustafaoğlu (2015) found significant differences in favor of classroom teacher candidates in their studies

with pre-service science and classroom teachers. According to Livingstone (2003), metacognition offers insight to distinguish successful students from weaker ones. In this context, it can be thought that students studying in different departments are more successful than each other. Again, when Table 3 is examined, there is a difference between teaching ($\bar{x}=28.56$) and coaching ($\bar{x}=30.00$) departments in favor of coaching ($\bar{x}=30.00$) department according to intrapersonal intelligence; between teaching ($\bar{x}=28.56$) and recreation ($\bar{x}=30.20$) departments in favor of recreation ($\bar{x}=30.20$) department. When the mean scores are examined, it is seen that the lowest mean is among the students of the teaching department. Yıldız, Öntürk & Efek (2020) did not find a significant difference between the intelligence fields according to the department variable in their study with university students receiving sports education. In their study with the students of sports sciences, conservatories, and fine arts, Uyduran and Abakay (2021) found significant differences in the field of intrapersonal intelligence between sports science students and fine arts students in favor of sports science students. It is seen that there are both similarities and differences in the results of the study. Gardner (2011, p.12) stated that this situation might differ in the strengths and weaknesses of individuals at any time due to genetic and life-related reasons. Likewise, Armstrong (2009, p.27) considers experience, cultural background, and genetics as why people have intelligence types in different fields. In this context, it can be said that the differences between studies stem from individual differences.

Table 4 shows that there was no discernible difference in the students' metacognitive awareness according to their branches. Gölünük-Başpınar and Ziyagil (2019) concluded in their study that participation in sports activities does not have a positive effect on metacognitive awareness. In a study aiming to compare the metacognitive awareness levels of successful and unsuccessful volleyball players in the Turkish men's volleyball league (Sevimli, 2018), no significant differences were found in favor of any player group. Research results support this study.

In Table 5, the relationship between intrapersonal intelligence and metacognitive awareness of the

students was examined, and there was seen a low positive correlation between intrapersonal intelligence and explanatory knowledge ($r=.38$, $p < .05$), procedural knowledge ($r=.34$, $p < .05$), planning ($r=$, $p < .05$), monitoring ($r=.34$, $p < .05$), debugging ($r=.33$, $p < .05$), and managing knowledge ($r=.37$, $p < .05$). It has been shown that there is a moderately positive relationship between intrapersonal intelligence and situational knowledge ($r=.40$, $p < .05$) and evaluation ($r=.43$, $p < .05$).

According to Table 6, it was determined that the equation that showed intrapersonal intelligence predicted students' metacognitive awareness was significant. As a result of the regression analysis, there was a positive and significant relationship between intrapersonal intelligence and assessment ($\beta=$, 343 , $p < .05$). In this context, it can be mentioned that there is a relationship between intrapersonal intelligence and metacognitive awareness. According to Visser, Ashton, and Vernon (2006), there is a tight link between intrapersonal intelligence and metacognition. Hou (2013) found significant differences between intrapersonal intelligence and metacognitive awareness in his study with college students. Maryati, Khasanah, and Maf'ula (2020), in their study with vocational high school students, concluded that intrapersonal intelligence is an essential predictor of metacognitive awareness. In their study with students from the school of physical education and sports, Kiremitci and Canpolat (2014) investigated the influence of intelligence domains on metacognitive awareness and problem-solving skills. As a result, they concluded that intrapersonal intelligence positively affects metacognitive awareness. Examining the research reveals that comparable outcomes are attained.

According to Multiple intelligenceoas is (2022), this situation can be summarized as follows; While metacognitive awareness helps individuals in matters such as what they should do, how they will do it, what kind of help they may need, intrapersonal intelligence supports the individual how he sees himself different from other people, and that his emotions and feelings guide him in what he will do while achieving something, accordingly the two concepts may support each other. In this way, individuals can more easily decide what is missing

in them, what they need to have while advancing to the goal, and how they will act.

As a result, intrapersonal intelligence positively affects the metacognitive awareness level of individuals, and it is recommended that future studies be conducted and compared with students studying in different faculties.

REFERENCES

- Abdelrahman, R. M. (2020). Metacognitive awareness and academic motivation and their impact on academic achievement of Ajman University students. *Heliyon*, 6(9).
- Akçam, S. (2012). Investigation of 6, 7 and 8 Grade Students' Levels of Metacognitive Awareness. Dokuz Eylül University.
- Akın, A., Abacı, R., & Çetin, B. (2007). The validity and reliability of the Turkish version of the metacognitive awareness inventory. *Educational Sciences: Theory & Practice*, 7(2), 655-680.
- Aktürk, A. O., & Şahin, I. (2010). Analysis of community college students' educational Internet use and metacognitive learning strategies. *Procedia-Social and Behavioral Sciences*, 2(2).
- Altan, M. Z. (2011). The theory of multiple intelligences and values education. *Pegem Journal of Education and Instruction*, 1(4), 53-57.
- Armstrong, T. (2009). *Multiple Intelligences in the Classroom*. Alexandria, VA: Association for Supervision & Curriculum Development.
- Bakioğlu, B., Alkış-Küçükaydın, M., Karamustafaoglu, O., Uluçınar-Sağır, Ş., Akman, E., Ersanlı, E., & Çakır, R. (2015). Investigation of prospective teachers' metacognitive awareness levels, problem solving skills and attitudes towards technology. *Trakya University Journal of Education*, 1(1), 22-33.
- Bedel, E. F., & Çakır, M. (2013). Examining prospective pre-school and biology teachers' metacognitive awareness and epistemological beliefs. *Marmara University Atatürk Education Faculty Journal of Educational Sciences*, 1(37), 84-98.
- Bümen, N. T. (2004). *The Theory of Multiple Intelligences in School*. Pegem Academic Publishing.
- Büyükoztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., & Demirel F. (2018). *Scientific Research Methods*. Pegem Publishing.
- Flavell, J. H. (1976). Metacognitive Aspects of Problem Solving. In L. R. Resnick (Ed.), *The Nature of Intelligence*. Hillsdale, NJ: Lawrence Erlbaum.
- Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books.
- Gardner, H. (1993). *Frames of Mind*. New York: Basic Books.
- Gardner, H. (2004). *Frames of Mind the Theory of Multiple Intelligences*. Alfa Publications.
- Gardner, H. (2011). Intelligence, creativity, ethics: Reflections on my evolving research interests. *Gifted Child Quarterly*, 55(4), 302-304.
- Gelen, İ. (2004). Attitude towards the Turkish lesson of cognitive awareness strategies. Impact on reading comprehension and persistence. *XIII. National Educational Sciences Congress*.
- Gölünük-Başpınar, S., & Ziyagil, M. A. (2019). Metacognitive awareness skill level of athletes and sedentary Turkish university students in both genders. *Asian Journal of Education and Training*, 5(4), 555-561.
- Hacker, D. J., & Dunlosky, J. (2003). Not all metacognition is created equal. *New Directions for Teaching and Learning*, 95, 73-79.
- Hou, Y. J. (2013). Metacognitive awareness of reading strategies and multiple intelligences in prediction of English reading comprehension with medical junior college students. *International Journal of Arts & Sciences*, 6(4).
- Idawati, Setyosari, P., Kuswandi, D., & Ulfa, S. (2020). Investigating the effects of problem-solving method and cognitive flexibility in improving university students' metacognitive. *Journal for the Education of Gifted Young Scientists*, 8(2), 651-665.
- Kaplan, K. (2021). Investigation of students metacognitive awareness in schools accepting students with special ability exams. *Journal of*

- Sports Education*, 5(2), 18-24.
- Karakelle, S. (2012). Interrelations between metacognitive awareness, perceived problem solving, intelligence and need for cognition. *Education and Science*, 37(164), 237-250.
- Karasar, N. (2009). *Scientific Research Methods*. Nobel Publishing.
- Kiremitci, O., & Canpolat, A. M. (2014). Determining the role of physical education and sports school students' multiple intelligences areas on metacognitive awareness and problem solving skills. *Hacettepe Journal of Sport Sciences*, 25(3), 118-126.
- Livingston, J. A. (2003). *Metacognition: An Overview*.
- Maryati, T., Khasanah, S. U., & Ma'ula, V. Y. (2020). Contribution of teacher's teaching skills and students' intrapersonal intelligence toward metacognitive awareness of students in state vocational school in Blitar. *Journal of Physics: Conference Series*.
- Morgan, H. (1996). An analysis of Gardner's theory of multiple intelligence. *Roeper Review*, 18(4), 263-269.
- Multiple Intelligence Oasis. (2022). *Metacognition and Intrapersonal Intelligence: Shall the Twain Meet?*.
- Mulyadi, D. (2016). The analysis of metacognitive awareness and post listening feedback on EFL listening activities. *Tarbawi Journal*, 13(1), 18-24.
- Özsoy, G. (2006). Problem solving and metacognition. *National Classroom Teaching Congress Proceedings*. Kök Publishing.
- Rozendaal, J. S., Minnaert, A. E. M. G., & Boekaerts, M. (2003). Motivation and self-regulated learning in secondary vocational education: Information-processing type and gender differences. *Learning and Individual Differences*, 13(4), 273-289.
- Saban, A. (2002). *Theory of Multiple Intelligences and Education*. Nobel Publications.
- Schraw, G., & Sperling-Dennison, R. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, 19, 460-470.
- Sellars, M. (2006). The role of intrapersonal intelligence in self directed learning. *Issues in Educational Research*, 16(1), 95-119.
- Selçioğlu-Demirsöz, E. (2010). *The Effects of the Creative Drama on the Democratic Attitudes, Metacognitive Awareness and Emotional Intelligence Abilities of the Teacher Trainees*. Dokuz Eylül University.
- Selçioğlu-Demirsöz, E. (2014). Metacognitive awareness and its developing. *Trakya University Journal of Education*, 4(2), 112-123.
- Sevimli, D. (2018). Comparison of the metacognitive awareness levels between successful and unsuccessful teams in the Turkish men's second volleyball league. *Universal Journal of Educational Research*, 6(12).
- Slavin, R. (2003). *Educational Psychology: Theory and Practice*. Boston: Allyn and Bacon.
- Stănescu, M., & Tomescu, G. (2020). The relationship between dance and multiple intelligences of institutionalised children: A theoretical framework for applied research. *Broad Research in Artificial Intelligence and Neuroscience*, 167-184.
- Şuruba-Rusen (Vasilii), A.-M., Murăreţu, D., Constantin Murăreţu, D., Petre, R.-L., & Teodoru, M. D. (2020). Analysis on the multiple intelligences of students from faculty of physical education and sports. *BRAIN: Broad Research in Artificial Intelligence and Neuroscience*, 185-199.
- Tabachnick, B., & Fidell, L. (2013). *Using Multivariate Statistics*. New Jersey: Sage Publications.
- Tunç, E. (2010). The relationship between the multiple intelligence field of eleven grade of high school students and type of high-school they attend, their education and sexuality. *Journal of Kazım Karabekir Education Faculty*, 108-130.
- Uyduran, M. A. C., & Abakay, U. (2021). Investigation of the multiple intelligence areas of students introducing the special talent examination for higher education institution. *European Journal of Physical Education and Sport Science*, 7(1).
- Visser, B. A., Ashton, M. C., & Vernon, P. A. (2006).

Beyond g: Putting multiple intelligences theory to the test. *Intelligence*, 34(5), 487-502.

Yazgı-Yanık, Z., & Afat, N. (2022). Metacognitive awareness as a predictor of social emotional learning skills in gifted and talented students. *Gifted and Talented International*, 1-10.

Yenilmez, K., & Çalışkan, S. (2011). Relationship

between multiple intelligences and creative thinking of secondary school students. *Journal of Dicle University Ziya Gökalp Faculty of Education*, 48-63.

Yıldız, M., Öntürk, Y., & Efek, E. (2020). The investigation of multiple intelligence modalities of university students receiving sports education. *Asian Journal of Education and Training*, 6(2), 246-255.

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