



THE EFFECT OF PHYSICAL EDUCATION AND SPORTS TEACHERS' PERCEPTIONS TOWARDS SCIENCE AND PEACE ON THEIR CULTURAL INTELLIGENCE LEVELS

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Abstract:

This study was conducted to examine the effect of physical education and sport teachers' perceptions of science and peace on their cultural intelligence levels. The study was designed using a relational survey model and a quantitative research method. The study sample consisted of 162 (32%) 'Female' and 344 'Male' (68%) 506 Physical Education and Sports (PES) Teachers. The data of the study were collected in the 2023-2024 academic year with a questionnaire form consisting of three sections. The questionnaire consists of personal information, a Perception Scale on the Relationship between Science and Peace (PSSP) and Cultural Intelligence Scale (CIS). In the analysis of the data, descriptive statistics, normality tests, independent groups t-test, one-way analysis of variance (ANOVA), Levene's test for homogeneity of variances, Scheffe, Tamhane T2 tests for pairwise comparisons, and Spearman and Pearson correlation analysis for relationship analysis were used. As a result of the study, it was determined that physical education and sports teachers' cultural intelligence (CI) and perception towards science and peace relationship (PPSR) scores were at a high level. In the t-tests performed in all scales and sub-dimensions, statistically significant differences were found only in the metacognition sub-dimension in the gender variable and only in the cognition sub-dimension in the

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marital status variable. In the analysis of variance, a statistically significant difference was determined in favor of teachers at the “teacher” career stage in the mean scores of the CIS in favor of teachers at the “teacher” career stage in the teaching career variable, and in favor of teachers at the “expert teacher” career stage in the mean scores of the PSSP in favor of teachers at the “expert teacher” career stage in the teaching career variable. Significance was found in favor of teachers with master's degrees in the mean scores of the scales in the graduation status variable. In Spearman correlation analyses, weak positive and significant relationships were found between the age variable and the “Metacognition” sub-dimension of the PSSP and the “Metacognition” sub-dimension of the CIS, and between the years of teaching seniority variable and the scales and their sub-dimensions. As a result of the Pearson correlation analysis conducted between the PSSP and the CIS, a statistically significant positive relationship was found between PSSP and the CIS averages of the PES Teacher at a moderate level. As a result of the analyses, it can be said that 38% of the total variability of the PES Teacher in PSSP is caused by the CI. As a result, PES Teacher affects PSSP, CI levels and differentiate according to some variables. The inclusion of multicultural approaches and activities in PES Teacher upbringing can support them in experiencing cultural diversity and developing their understanding of science and peace in this context.

Keywords: science, peace, cultural intelligence, physical education and sports teacher

1. Introduction

In today's world, scientific and technological developments affect people's lives in every field. Looking at the items used by people living in ancient times and the items used by people today, it is seen that as technology develops, items provide more convenience in people's lives. While in the past, governments and people spent a lot of time and effort communicating, now they can instantly communicate with people in every part of the world through channels such as e-mail, text messages and video calls. Science benefits technological developments and increases the level of welfare by affecting people's lives through continuous development. Science is vital for international peace and for meeting development goals (UNESCO, 2001). The peaceful gathering of people around the idea of universal humanity, away from divisive characteristics, can only be realized when it is compatible with the fundamental values of science (Aydın, 2012). All people agree that societies that thrive on science can easily adapt to an environment of peace. Science is seen as an important element in achieving peace and realizing international development goals. Organizations such as the Science for Peace and Security Committee (SPS), the North Atlantic Treaty Organization (NATO), and the United Nations Educational, Scientific and Cultural Organization (UNESCO) support the contribution of science to peace and carry out activities in this regard (UNESCO, 2001; SPS Program, 2017; UNESCO, 2017).

In order for peace to be achieved globally all over the world, it is important that it should be included in comprehensive education programs in every field along with national policies. Education is a critical tool for providing people with the knowledge, skills, values, qualities, and attitudes necessary for people to live in peace. With a well-organized education, people can develop skills for economic development and sustainable living, while their negative attitudes and behaviors towards violence can be redirected (Asiyai, 2015). At the General Conference of the United Nations Educational, Scientific and Cultural Organization held in Paris, they declared that they would fulfill their duties to promote peace and human rights, international cooperation and respect for fundamental freedoms through education (UNESCO, 2024). In addition to the activities carried out by global organizations to ensure peace through the impact of science, people's attitudes, perceptions and thoughts about the relationship between science and peace have become more important. However, in order to give direction to the perception, the current perception must first be revealed (Bakan & Kefe, 2014). In addition, it is important to first determine the current perceptions of teachers in order to give direction to their perceptions of the relationship between science and peace.

The foundations of the concept of cultural intelligence were laid with a book on social sciences at Stanford University (Van Dyne, Ang, Ng, Rockstuhl, Tan, & Koh, 2012). The conceptualization process of cultural intelligence started with Earley and Ang's (2003) explanation of people's ability to adapt to an unfamiliar environment, to understand people from different cultures, and to adapt to multicultural environments. Later, different researchers explained cultural intelligence with expressions such as Thomas (2006), the ability to be in positive relationships with people from different cultures and to understand them, Presbitero (2016), the ability to connect and adapt between cultures and even to improve this harmony and to empathize like a native person (Early & Mosakowski, 2004). The formation or definition of cultural intelligence in individuals is not a predictable process. Cultural intelligence is a non-sequential process based on experience and experience that involves not only knowledge of different cultures but also understanding and adapting to different cultures. Cultural intelligence has characteristics such as being open to development, growth and change, supporting cultural diversity, examining behaviors rather than knowledge, including cultural values, beliefs, traditions and customs (Livermore, 2010).

The concept of cultural intelligence is formed by the combination of many components. In terms of having a multidimensional structure, although cultural intelligence is categorized differently by different researchers in terms of name and number, they are basically united at the same point. First, Earley and Ang (2003) examined cultural intelligence as cognitive, behavioral and motivational, and then Early and Mosakowski (2004) examined it in 3 dimensions as cognitive, physical and emotional. Thomas (2006) examined cultural intelligence as awareness, knowledge and behavior. At the end of their studies, researchers (Ang & Van Dyne, 2008; Earley & Ang, 2003; Livermore, 2010) dimensioned cultural intelligence in 4 dimensions: metacognitive, motivational, cognitive and behavioral. The metacognitive dimension is explained as the

person's knowledge of cultural differences and acting accordingly (Crowne, 2008), the motivational dimension as the capacity to direct attention and energy in the right direction, the cognitive dimension as the person's level of cultural knowledge as a result of experience and education, and the behavioral dimension as the person's focus on their actions rather than what they think (Ang & Van Dyne, 2008; Van Dyne *et al.*, 2012; Earley & Ang, 2003; Livermore, 2010). In light of this information, it is seen that each dimension of cultural intelligence is very important and that no cultural intelligence sub-dimension alone will indicate a high level of cultural intelligence. Increasing cultural intelligence has been found to positively increase individuals' intercultural communication, sense of well-being, and interpersonal interaction and even reduce burnout (Büyükbeşe & Yıldız, 2016; Şahin & Gürbüz, 2012; Thomas *et al.*, 2008).

When we look at the literature, studies such as the concept of science (Köroğlu & Köroğlu, 2016; Silver & Rushton, 2008; Laubach, Crofford, & Marek, 2012), the concept of peace and perception of peace (Kılcan, 2018; Sarı & Kermen, 2015), and the concept of cultural intelligence (Göktürk, 2023; Şahin & Gürbüz, 2012) have been conducted. In addition to these studies, Kılcan (2018) developed the Individual Attitude Towards Peace Scale. In addition, the scale developed by Dilek-Eren (2016) to measure their perceptions about the relationship between science and peace is also included in the literature. It has been observed that there are studies examining the cultural intelligence levels and predictors of teachers and pre-service teachers (Petrović, 2011; Ekici, 2017; Engin & Genç, 2015), and there are studies in areas such as intercultural adaptation (Ang *et al.*, 2007), personality traits and leadership (Ang, Van Dyne, & Koh, 2006; Kim & Van Dyne, 2011). In most studies, it has been determined that there are significant relationships between cultural intelligence and cultural adaptation, personality traits, leadership and management. However, studies examining the effect of perception towards science and peace on cultural intelligence and evaluating these concepts together were not found in the literature.

It is important for communities around the world to live in mutual trust, understanding and peace, not only for the survival of communities but also for world peace. Considering the importance of sports for world peace, it is thought that examining the effect of physical education and sport (PES) teachers' perceptions of science and peace on cultural intelligence will contribute to the literature. In addition, it is foreseen that it will be a guiding feature for future studies in sports sciences, science education and social fields.

2. Materials and Methods

2.1. Research Design

Since the study aimed to measure the effect of physical education and sports teachers' perceptions of science and peace on their cultural intelligence levels, the relational survey method in the descriptive survey model was used. Survey models are suitable for studies that aim to describe a past and existing situation as it exists (Karasar, 2006). Descriptive

survey models are divided into two parts: general survey and case survey. The relational survey model is a part of the general survey method. General survey models are survey arrangements conducted on the whole universe or a sample to be taken from it in order to make a general judgment about the universe in a universe consisting of a large number of elements (Karasar, 2006). This group is used for unrelated survey models that aim to determine the presence or degree of co-variance between two or more variables and is considered appropriate for this type of research (Cohen, Manion, & Morrison, 2002; Karasar, 2006).

2.2. Participants

The population of the study consists of Physical Education and Sports Teachers working in schools affiliated to the Ministry of National Education. The sample consists of 506 Physical Education and Sports Teachers, 162 (32%) 'Female' and 344 'Male' (68%) who voluntarily participated in the study. The mean age of the participants was 32.26 ± 5.91 and the mean years of teaching seniority was 8.32 ± 5.63 .

Table 1: Percentage and frequency distributions of variables related to physical education and sports teachers

Variables		n	%
Gender	Woman	162	32,0
	Male	344	68,0
Your Teaching Career	Candidate Teacher	31	6,0
	Teacher	392	78,0
	Expert Teacher	79	15,0
	Head Teacher	4	1,0
Graduation Status	License	358	71,0
	Master's Degree	142	28,0
	PhD	6	1,0
Marital Status	Married	175	35,0
	Single	331	65,0

Table 1 shows the percentage and frequency distributions of the variables of the PES Teacher participating in the study. A total of 506 teachers, 162 female (32%) and 344 male (68%), participated in the study. According to the teaching career variable, 6% (31) of the teachers were candidate teachers, 78% (392) were teachers, 15% (79) were expert teachers, and 1% (4) were head teachers. 71% (358) of the PES teachers had a bachelor's degree, 28% (142) had a master's degree, and 1% (6) had a doctorate degree. Regarding the marital status variable, 35% (175) of the teachers were married and 65% (331) were single.

2.3. Data Collection

The data were collected with the voluntary participation of Physical Education and Sports Teachers working in public and private schools in DOKAP (Eastern Black Sea Project) provinces (Artvin, Bayburt, Giresun, Gümüşhane, Ordu, Rize, Samsun, Tokat, Trabzon, Amasya, Çorum) in the 2023-2024 academic year. Ethics committee permission

was obtained for the research. The questionnaires were collected with the help of Google Forms

(<https://docs.google.com/forms/d/1fHj4hcnE5eJhWfL6TeUGNcQHw0apjnO0GFVQPvuRo/edit?usp=drivedk>).

This article adhered to the journal writing rules, publication principles, research and publication ethics, as well as journal ethics throughout the research process. The author is responsible for any violations related to the article. The participants' voluntary consent was considered when collecting the data. To conduct the research, ethics committee approval was obtained from the Bayburt University Rectorate Ethics Committee, with the letter dated 29.03.2024 and decision number 2024/68, E-15604681-100-193180.

2.4. Data Collection Tools

The data collection tool is a questionnaire form consisting of three sections: Section 1 personal information (Gender, Marital Status, Age, Last Graduated School, Years of Teaching Experience, Teaching Career)

Chapter 2 The Perception Scale on the Relationship between Science and Peace (PSSP) was developed by Dilek-Eren in 2016. This scale is a 26-item reliable scale with a Cronbach's alpha (α) reliability coefficient of .93 and a total of four factors. The factors are communication and intercultural dialogue, technological developments, socio-economic developments and peace education.

Section 3 consists of the Cultural Intelligence Scale (CIS) (İlhan & Çetin, 2014). Cultural Intelligence Scale (CIS) was developed by Ang *et al.* (2004) and adapted into Turkish by İlhan and Çetin (2014). The cultural intelligence scale is a self-report instrument designed to measure the cultural intelligence of individuals. The scale has a 7-point Likert-type rating and consists of 20 items. The original form of the scale has a four-dimensional structure including metacognition (4 items), cognition (6 items), motivation (5 items) and behavior (5 items).

Reliability analysis and coefficients of the scale and its sub-dimensions used in this study are shown in Table 2 below.

Table 2: Cronbach's alpha reliability coefficients (internal consistency)

	Number of Items	Cronbach Alpha Coefficient
CI_ metacognition	4 items	,646
CI_ cognition	6 items	,791
CI_ motivation	5 items	,746
CI_ behavior	5 items	,760
CIS_total	20 items	,873
PSSP_total	26 items	,871

Table 2 shows the results of the reliability analysis of the scale used in the research; Cronbach's Alpha internal consistency coefficient was found to be .873 for the CIS general scale and .871 for the PSSP general scale. In the sub-dimensions, the lowest was calculated

as ,646 and the highest as ,791. Since these values are between $0.80 < \alpha < 1.00$, according to Özdamar (2002), the scale has high reliability. In addition, the KMO sampling adequacy was calculated as ,932 for PSSP and ,886 for CIS. Nunes *et al.* (2020) also stated that if the KMO value is above 0.75, this provides a suitable data set for factor analysis.

2.5. Data Analysis

The raw data collected from the individuals in the research were checked one by one, and the questionnaires with incomplete, incorrect, and inconsistent answers were excluded from the analysis in order to prevent possible errors and prepare them for analysis. In the normality test, skewness and kurtosis values of the data were examined. According to Tabachnick & Fidell (2013), if the skewness and kurtosis values take a value between +1.5 and -1.5, the data were considered to be normally distributed and evaluated accordingly (Table 3).

Parametric tests were applied to the data to ensure that it was suitable for normal distribution. In the general evaluation of the data, descriptive statistics (mean, standard deviation, variance), independent samples t-test and one-way variance (One-Way ANOVA) analysis were used. In the analyses where significant differences were found in ANOVA tests, the Scheffe test was preferred when the group variances were equal, and the Tamhane T2 test was preferred when the variances were not equal. Again, the Levene Homogeneity test was used to determine the homogeneity of the groups in the tests. In correlation analysis, Pearson correlation analysis was used for variables with normal distribution and Spearman correlation analysis was used for variables without normal distribution. The data were analyzed with the SPSS 24 package program at a 0.05 significance level.

3. Findings

Table 3: Descriptive statistics and normal distribution values of scales and subscales

	n	Min	Max	X	Sd	Skewness	Kurtosis
CI_ metacognition	506	2,25	7	5,48	0,851	-.774	1.231
CI_ cognition	506	2	7	5,16	1,005	.888	.429
CI_ motivation	506	1,6	7	5,48	1,007	-.862	.420
CI_ behavior	506	1,40	7	5,40	0,898	-1.310	1.183
CIS_ total	506	49	140	107,38	14,885	-.757	1.320
PSSP_ total	506	48	126	97,90	12,107	-1.171	1.606

When Table 3 is examined, it is seen that the scores they received from PES teachers, CIS and PSSP were high (107.38/97.90). When the sub-dimensions of the CIS scale are analyzed, the highest mean score was obtained in the metacognition and motivation sub-dimension ($X=5.48$), while the lowest mean score was obtained in the cognition sub-dimension ($X=5.16$).

Table 4: T-test between physical education and sports teachers' gender variables and scales and subscales

Scales & Sub-dimensions	Gender	n	X	Sd	t	p
CI_ metacognition	Female	162	5,23	0,946	-4,612	,000**
	Male	344	5,60	0,777		
CI _ cognition	Female	162	5,15	1,023	-0,162	,872
	Male	344	5,16	1,071		
CI _ motivation	Female	162	5,45	0,983	-0,395	,693
	Male	344	5,49	1,019		
CI _ behavior	Female	162	5,31	0,924	-1,588	,113
	Male	344	5,45	0,884		
CIS_ total	Female	162	105,73	15,133	-1,719	,086
	Male	344	108,16	14,724		
CIS_ average	Female	162	5,28	0,756	-1,719	,086
	Male	344	5,40	0,736		
PSSP_ average	Female	162	3,71	0,507	-1,674	,095
	Male	344	3,79	0,443		

When Table 4 is examined, the results of the independent samples t-test used to compare the CIS scale subdimensions and PSSP scores by gender reveal that a statistically significant difference was found only in the upper cognition subdimension of the scales and subdimensions ($p < .05$).

Table 5: T-test between physical education and sports teachers' marital status variables and scales and subscales

Scales & Sub-dimensions	Marital Status	n	X	Sd	t	p
CI_ metacognition	Single	331	5,49	0,854	0,192	,848
	Married	175	5,47	0,849		
CI _ cognition	Single	331	5,23	1,025	2,141	,033*
	Married	175	5,02	1,100		
CI _ motivation	Single	331	5,42	1,081	-1,94	,053
	Married	175	5,59	0,841		
CI _ behavior	Single	331	5,41	0,894	0,15	,881
	Married	175	5,39	0,908		
CIS_ total	Single	331	107,57	15,349	0,39	,697
	Married	175	107,03	14,000		
CIS_ average	Single	331	5,37	0,767	0,39	,697
	Married	175	5,35	0,700		
PSSP_ average	Single	331	3,76	0,413	0,019	,985
	Married	175	3,76	0,552		

When Table 5 is examined, in the independent samples t-test results used to compare the CIS scale sub-dimensions and PSSP scores of the teachers participating in the study according to the marital status variable, a statistically significant difference was found only in the CIS Cognition sub-dimension ($p < .05$).

Table 6: One-way variance analysis (ANOVA) between physical education and sports teachers' teaching career variables and scales and subscales

Scales & Sub-dimensions	Teaching Career	n	X	Sd	V	SS	df	MS	F	p	Difference
PSSP_ average	Candidate Teacher (1)	31	3,5955	0,44098	Between groups	3,839	3	1,28	6,079	.000	1<3, 2<3
	Teacher (2)	392	3,7605	0,46325	Within groups	105,671	502	0,21			
	Expert Teacher (3)	79	3,8909	0,36868	Total	109,51	505				
	Head Teacher (4)	4	3,1154	1,33235		6,539	3	2,18	4,005		
CIS_ average	Candidate Teacher (1)	31	5,0968	0,68786	Between groups	273,196	502	0,544		,008	
	Teacher (2)	392	5,4298	0,76857	Within groups	279,736	505				
	Expert Teacher (3)	79	5,1892	0,55277	Total	2,173	3	0,724	0,999		
	Head Teacher (4)	4	5,125	1,18357		364,118	502	0,725			
CI_ metacognition	Candidate Teacher (1)	31	5,3629	0,77953	Between groups	366,292	505			,393	
	Teacher (2)	392	5,4936	0,89147	Within groups	32,664	3	10,888	10,313		
	Expert Teacher (3)	79	5,5348	0,64143	Total	529,972	502	1,056			
	Head Teacher (4)	4	4,875	1,01036		562,636	505				
CI_ cognition	Candidate Teacher (1)	31	4,8065	0,97096	Between groups	1,605	3	0,535	0,526	.000	3<2
	Teacher (2)	392	5,2997	0,99776	Within groups	510,922	502	1,018			
	Expert Teacher (3)	79	4,6456	1,18254	Total	512,527	505				
	Head Teacher (4)	4	4,9167	1,05848		6,341	3	2,114	2,642		
CI_ motivation	Candidate Teacher (1)	31	5,3355	0,73826	Between groups	401,634	502	0,8		,665	
	Teacher (2)	392	5,5133	1,0303	Within groups	407,974	505				
	Expert Teacher (3)	79	5,4	0,95863	Total	3,839	3	1,28	6,079		
	Head Teacher (4)	4	5,4	1,61658		105,671	502	0,21			
CI_ behavior	Candidate Teacher (1)	31	4,9935	1,07143	Between groups	109,51	505			,049	
	Teacher (2)	392	5,4515	0,93168	Within groups	6,539	3	2,18	4,005		
	Expert Teacher (3)	79	5,3544	0,56109	Total	273,196	502	0,544			
	Head Teacher (4)	4	5,3	1,03923							

When Table 6 is examined, statistically significant differences were found in PSSP, CIS and behavior and cognition sub-dimensions ($p < .05$). It is seen that the differences in the scales and sub-dimensions are in favor of the teachers at the expert teacher career level.

Table 7: One-way variance analysis (ANOVA) between the scales and sub-dimensions with the graduation status variable of physical education and sports teachers

Scales & Sub-dimensions	Graduation Status	n	X	Sd	V	SS	df	MS	F	p	Difference
PSSP_ average	License (1)	358	3,7382	0,52095	Between groups	0,954	2	0,477	2,21	,111	1<2,
	Master's Degree (2)	142	3,835	0,2818	Within groups	108,556	503	0,216			
	PhD (3)	6	3,7628	0,30713	Total	109,51	505				
CIS_ average	License (1)	358	5,2462	0,7449	Between groups	25,716	2	12,858	25,461	,000	1<2, 3<1, 3<2
	Master's Degree (2)	142	5,7127	0,62556	Within groups	254,02	503	0,505			
	PhD (3)	6	4,6	0,3873	Total	279,736	505				
CI_ metacognition	License (1)	358	5,3778	0,86455	Between groups	23,795	2	11,897	17,473	,000	1<2,
	Master's Degree (2)	142	5,8028	0,67755	Within groups	342,497	503	0,681			
	PhD (3)	6	4,5417	1,47832	Total	366,292	505				
CI_ cognition	License (1)	358	5,0326	1,0432	Between groups	23,893	2	11,947	11,154	,000	1<2
	Master's Degree (2)	142	5,5106	1,02591	Within groups	538,743	503	1,071			
	PhD (3)	6	4,8333	0,60553	Total	562,636	505				
CI_ motivation	License (1)	358	5,3453	1,05794	Between groups	32,784	2	16,392	17,187	,000	1<2
	Master's Degree (2)	142	5,8704	0,73193	Within groups	479,743	503	0,954			
	PhD (3)	6	4,6	0,96333	Total	512,527	505				
CI_ behavior	License (1)	358	5,2983	0,92349	Between groups	25,113	2	12,557	16,497	,000	1<2, 3<1, 3<2
	Master's Degree (2)	142	5,7254	0,73363	Within groups	382,861	503	0,761			
	PhD (3)	6	4,3667	0,70899	Total	407,974	505				

When Table 7 is examined, statistically significant differences were found in PSSP, CIS and all sub-dimensions ($p < .05$) in the comparison of the teachers participating in the study according to the graduation status variable. According to Tamhane's T2 test, which is one of the multiple comparison tests in all sub-dimensions, there is a difference in favor of teachers with master's degrees.

Table 8: Spearman correlation analysis between physical education and sports teachers' age and scales and sub-dimensions

n = 506	Age	PSSP_ average	CIS_ average	CI_ metacognition	CI_ cognition	CI_ motivation	CI_ behavior
Age	1	,136**	0,044	,128**	,024	,033	,025

**p<0.01

When Table 8 is analyzed, as a result of Spearman correlation analysis, there are positive and significant relationships between age and scale sub-dimensions ($r_{PSSP} = ,136$, $p < 0.01$; $r_{CI_metacognition} = ,128$, $p < 0.01$). There are weak positive and significant relationships between the variables PSSP and CIS Metacognition subdimension. While these linear relationships show the magnitude of the relationship between the two variables, they do not say anything about the cause-and-effect relationship. As age increased, teachers' scores on the scales and sub-dimensions increased.

Table 9: Spearman correlation analysis between physical education and sports teachers' years of teaching seniority and scales and subscales

n = 506	Years of Teaching Seniority	PSSP_ average	CIS_ average	CI_ metacognition	CI_ cognition	CI_ motivation	CI_ behavior
Years of Teaching Seniority	1	,125**	,038	,100*	,031	,013	,030

**p<0.01

When Table 9 is examined, as a result of Spearman correlation analysis, there are positive and significant relationships between years of teaching experience and the sub-dimensions of the scales ($r_{PSSP} = .125$, $p < 0.01$; $r_{CI_metacognition} = .100$, $p < 0.01$). When the scales and their sub-dimensions were analyzed with the variable of years of teaching experience, similar results were observed with the variable of age. As the years of teaching seniority increased, the mean scores of PSSP and CIS metacognition sub-dimension scores increased.

There are some directional but weak linear relationships between the variables. While these linear relationships show the magnitude of the relationship between two variables, they do not say anything about the cause-and-effect relationship. As the age increased, the scores of the fans on the sub-dimensions of the scale decreased.

Table 10: Pearson correlation analysis between PSSP&CI scales and subscales of physical education and sports teachers

n = 506	CIS_ average
PSSP_ average	,380**

**p<0.01

When Table 10 is examined, as a result of the Pearson correlation analysis, there is a statistically significant positive relationship between the PSSP and CIS averages of Physical Education and Sports Teachers at a moderate level. Accordingly, it can be said that 38% of the total variability in the perceptions of PES Teachers towards the relationship between science and peace is caused by cultural intelligence.

4. Results and Discussion

In this study, the effect of physical education and sports teachers' perceptions of science and peace on their cultural intelligence levels was examined. The population of the study consists of Physical Education and Sports Teachers working in schools affiliated with the Ministry of National Education. 506 teachers (162 (32%) 'Female' and 344 (68%) 'Male' (68%) participated in the study. The average age of the participants was 32.26 ± 5.91 .

It is seen that the overall mean score of Science and Peace Relationship as perceived by PES Teacher is high ($X=97,90$), and the mean score of the Cultural Intelligence Scale is high ($X=107,98$). In the sub-dimensions of the CI scale, the metacognition and motivation sub-dimension had the highest mean ($X=5.48$), while the cognition sub-dimension had the lowest mean ($X=5.16$). In similar studies, it was determined that teachers and pre-service teachers had high levels of cultural intelligence (Aktaş-Üstün & Akdeniz, 2021; Wujiabudula & Karatepe, 2020; Bolattaş Gürbüz & Deniz, 2023; Çabuk-Aksop, Özdemir, & Özçakır, 2021). In different studies (Deveci & Karadağ, 2008; Dilek-Eren, Kaygısız, & Benzer, 2018), it was observed that pre-service teachers had high perceptions of science and peace. In addition, (Aktaş-Üstün & Akdeniz, 2021; Yüksel & Ereş, 2018), similar to the current study, the highest metacognitive and the lowest cognitive intelligence component scores were obtained from the sub-dimensions of intelligence levels. As a result of the studies analyzed, it can be said that teachers' CI levels and science-peace perceptions are at a high level. This is thought to be due to the fact that teachers have a positive view of the world, are constantly active as a social being, and are aware of the existence of different cultures. In the current study, it was determined that physical education and sports teachers had high cultural intelligence scores and higher metacognitive intelligence scores. Considering that sports play an important role in solving problems arising from intercultural differences (Erkalan-Çakır, 2020), this result is a possible situation. In addition, a different study (Ergün & Güzel, 2017) revealed that female students interested in sports had higher metacognitive intelligence scores than female students who were not interested in sports.

In the independent samples t-test results used to compare the CIS scale sub-dimensions and PSSP scores of the teachers participating in the study according to gender, a statistically significant difference was found only in the metacognition sub-dimension of the scales and sub-dimensions ($p < .05$). These results coincide with the studies in the literature (Bolattaş Gürbüz & Deniz, 2023; Kaya-Küçük, 2022; Shomoossi *et al.*, 2019). In the study conducted by Mahasneh, Gazo, and Al-Adamat (2019), significance was found in favor of men. In another study, Koçak and Özdemir (2015) found

significance in favor of women. In line with these results, it is difficult to conclude whether gender has a predominant effect on cultural intelligence. However, it is thought that gender roles should be taken into consideration in the formation and development of cultural intelligence.

In the independent samples t-test results used to compare the CIS scale sub-dimensions and PSSP scores of the teachers participating in the study according to the marital status variable, a statistically significant difference was found only in the CIS Cognition sub-dimension ($p>.05$). Karaca Sivrikaya and Sivrikaya (2022) stated in their study that married students had a higher CI in the behavior sub-dimension and single students had a higher CI in the metacognition sub-dimension. Sözer (2023) examined the CI scores of soccer players and found no significance according to their marital status. In the current study, a significance was found only in the cognition sub-dimension. In this direction, it can be concluded that the marital status variable does not affect cultural intelligence. Alternatively, it can be interpreted that different results may emerge from different sample situations.

In the results of the analysis of variance used in the comparison of the CIS sub-dimensions and PSSP scores of the teachers participating in the study according to the teaching career status variable, a statistically significant difference was found in favor of the teachers at the teacher career stage in the CIS mean scores and in favor of the teachers at the expert teacher career stage in the PSSP mean scores ($p>.05$). Wujiabudula and Karatepe (2020) found the cultural intelligence scores of senior English teachers at a higher level in their study. Considering the related studies in the literature (Kang, Kim, & Park, 2019; Yüksel & Ereş, 2018) did not find any significance in cultural intelligence scores in the analyzes related to teachers' experiences. It would not be wrong to think that increasing life experience as an individual will increase the level of cultural intelligence. In this direction, it is expected and desired that the increase in the career steps of physical education teachers, in other words, the increase in their experience, will increase their cultural intelligence levels.

In the results of the analysis of variance used to compare the CIS sub-dimensions and PSSP scores of the teachers participating in the study according to the graduation status variable, a statistically significant difference was found in favor of teachers with master's degrees in CIS and PSSP average scores in general ($p>.05$). Yüksel and Ereş (2018) reached similar results in their study. In another study (Sözer, 2023), the educational status of football players did not affect their cultural intelligence scores. Çabuk-Aksop, Özdemir and Özçakır (2021) did not observe any significance between educational status and cultural intelligence in their study with mathematics teachers. It is thought that the increase in the educational level of physical education and sports teachers increases the level of cultural intelligence.

According to Spearman correlation analysis; weak positive and significant relationships were found between age variable and PSSP and CIS Metacognition sub-dimension. Similar studies in the literature (Adıgüzel *et al.*, 2022; Kaya-Küçük, 2022; Sözer, 2023) found that the age variable did not affect cultural intelligence. In addition,

participants' meta-cognitive intelligence showed statistical differences according to their age. However, cognitive, motivational and behavioral cultural intelligence did not show a statistically significant difference in terms of the age of the participants (Wujiabudula & Karatepe, 2020). When the scales and sub-dimensions are examined with the variable of years of teaching seniority, similar results are observed with the age variable. As the years of teaching experience increased, PSSP averages and CIS Metacognition sub-dimension scores increased. Considering the related studies in the literature (Kang, Kim, & Park, 2019; Yüksel & Ereş, 2018), no significance was found in cultural intelligence scores in the analyzes related to teachers' experience. Although different results from the current study were obtained in the literature, it is thought that it would be important to examine this situation when the idea that increasing experience will increase the level of cultural intelligence comes to mind. As a result of Pearson correlation analysis between PSSP and CIS, there is a statistically significant positive relationship between PSSP and CIS averages of Physical Education and Sports Teachers. According to this, it can be said that 38% of the total variability in PES Teacher perceptions of the relationship between science and peace is caused by Cultural Intelligence. In other words, 38% of the total variability in Cultural Intelligence comes from PES Teacher PSSP. In the national and international publications in the field of Sport Sciences and Social Sciences, no study on the correlation of these two scales was found.

6. Recommendations

In order to better understand and improve the relationships between Physical Education and Sports Teachers' perceptions of science and peace and their cultural intelligence, we can make several suggestions:

- Trainings on cultural intelligence for Physical Education and Sports Teachers can help them understand and respect different cultures. Also, these trainings can be designed to develop scientific thinking and understanding of peace.
- In-service trainings and workshops on science and peace can be organized.
- The inclusion of multicultural approaches and activities in Physical Education and Sports Teacher training programs can support them to experience cultural diversity and develop their understanding of science and peace in this context. These approaches and activities can encourage the professional development of Physical Education and Sport Teachers.
- Mentoring and consulting of young teachers by experienced PE teachers can also help to develop their perceptions of cultural intelligence, science and peace.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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