

Examining the Problem Solving Skills and Assertiveness Characteristics of Physical Education Teachers Working in Secondary and High Schools According to Certain Variables

Adem Karatut¹, Fuat Orkun Tapşın¹, Gökhan Çakmak², Sabit Selvi¹, Faik Orhun Tapşın³

¹Kocaeli University, Institute of Health Sciences, Turkey; ²Kocaeli University, Sports Science Faculty, Turkey. ³Gazi University, Institute of Health Sciences, Turkey.

Summary. *Study Objective:* The purpose of this study is to examine the problem-solving skills and assertiveness characteristics of physical education teachers working in secondary and high schools. *Methods:* The sample group of the study consisted of physical education teachers working in Çayırova district of Kocaeli province and Adapazarı district of Sakarya province. The data were collected through Google Forms. The number of participants reached in this way is 139. SPSS 20.0 package program has been used to analyze the data. Besides descriptive statistics, T Test and ANOVA Test have been used in the analysis of the data because the data were distributed normally. *Results:* While there is a significant relationship in favour of males in the evaluative approach of the problem solving skills of physical education teachers in primary and secondary schools ($p < .05$), a significant difference was found in favour of married individuals in assertiveness levels ($p < .05$). *Conclusions:* As a result of the study, while there was a significant difference in favour of males in the evaluative approach of problem solving skills, no significant relationship was found in other sub-dimensions.

Key words: Problem solving, Assertiveness, Physical Education, Secondary School, High School

Introduction

Assertiveness and problem solving skills are concepts that have an important place in almost everyone's natural and business life. For example, while a student increases the level of his/her achievement thanks to his/her problem solving skills, a scientist can direct science with his/her assertiveness and decisions he/she takes. For these reasons, the relationship between assertiveness and problem solving skills is important in achieving the determined goals.

Assertiveness is a concept that is defined as a person's protecting his/her rights, socializing and being accepted by the society without humiliating or judging anyone and has its own characteristics. The main characteristics of assertiveness are counted as to speak first, continue to speak and end the speech (1).

There are many definitions of assertiveness. It is seen that assertiveness traits are not inherited, since they appear as behaviors that we have acquired later which are appropriate for verbal or non-verbal situations rather than our innate personal characteristics (2). In its most general discourse, assertiveness is "a way of communicating honestly and directly within a constraint determined by social boundaries" (3).

Problem solving has been described as one of the highest cognitive processes Bloom et al., (4). Problem solving is the ability of a person to identify and define problems, to find and produce solutions, to use solutions and to see whether they are effective or not at the end (5). Problem-solving process consists of three parts: not ignoring the problem, believing in solving or investigating and finding the cause of the problem or doing something about the problem (6). The use of

problem solving skills is the reaction that people give to upsetting incidents (7).

Lazarus stated that assertive behavior is divided into four different reaction classes: the ability to say no to undesirable situations, the ability to plead and request, to express feelings and thoughts in a free manner, to start, continue and end the speech in human relations (8).

For many years, researchers in various fields have proposed different approaches on how to develop problem-solving skills and assertiveness behavior. Undoubtedly, one of the important areas that need to be worked on, to think about and to reach some results is the problem solving skills and the concept of assertiveness in sports (9). This study has been conducted in order to examine the problem-solving skills and assertiveness characteristics of physical education teachers working in secondary and high schools according to the variables of gender, age, marital status and the institution they work in.

Materials and Methods

Research Model

This research has been conducted using correlational and causal survey models which are among the quantitative research designs. With the correlational survey model, the presence and / or degree of covariance between two or more variables can be determined (10). The causal survey model, on the other hand, is a research model performed for determining the independent variable or variables that are effective on one or more dependent variables (11).

Population and Sample

The sample group of the study consisted of physical education teachers working in Çayirova district of Kocaeli province and Adapazarı district of Sakarya province. The reason for choosing these two districts is their proximity to researchers. The study was limited to only these 2 districts due to time and opportunity constraints. The criterion sampling method was used in this study. The participants' being physical education

teachers, working in public and private schools affiliated to the Ministry of National Education and living in Çayirova or Adapazarı districts have been determined as the criteria for these participants. The data were collected through Google Forms. Teachers working in 2 districts in the sample group were reached and they were asked to fill in the relevant questionnaire. Participants were included in the study on a voluntary basis. The number of participants reached in this way is 139.

Looking at the demographic characteristics of the participants, it is observed that 69.1% of the participants (96 people) are males, 40.3% (56 people) are between the ages of 33-41, 63.3% (88 people) are married and 54% (75 people) are working in secondary schools.

Data Collection Tools

The Problem Solving Skills Perception Scale developed by Heppner (12) and adapted into Turkish by Şahin, Şahin and Heppner (13) and the Rathus Assertiveness Inventory developed by Rathus (14) and adapted into Turkish by Voltan (15) have been used for collection of the data. The Problem Solving Skills Perception Scale was prepared as a 6-point Likert type and consists of 35 questions and 6 sub-dimensions. The Problem Solving Skills Perception Scale consist of hasty approach, thinking approach, avoidant approach, evaluative approach, confident approach, and planned approach sub-dimensions. The items 9, 29 and 29 have not been included in scoring of the scale. The items 1, 2, 3, 4, 11, 13, 14, 15, 17, 21, 25, 26, 30 and 34 of the

Table 1. Frequency and Percentage Values of Demographic Characteristics of the Participants

	Variables	N	%
Gender	Female	43	30.9
	Male	96	69.1
Age	24-32	53	38.1
	33-41	56	40.3
	42-50	28	20.1
	51 and older	2	1.4
Marital Status	Married	88	63.3
	Single	51	36.7
School Worked	Secondary School	75	54.0
	High School	64	46.0

scale are scored in reverse. This scale is used to indicate how individuals react to problems and how they behave in their personal and daily lives. In this study, Cronbach's Alpha value of the Problem Solving Skills Perception Scale was determined as .718.

On the other hand Rathus Assertiveness Inventory has been prepared as 6-point Likert type and consists of 30 questions in total. The questions in this scale consist of positive and negative statements. Therefore, reverse coding has been made for negative statements. Items 3, 6, 7, 8, 10, 18, 20, 21, 22, 25, 27, 28 and 29 in the scale are positive and items 1, 2, 4, 5, 9, 11, 12, 13, 14, 15, 16, 17, 19, 23, 24, 26 and 30 are negative. Rathus Assertiveness Inventory has a single factor structure. In this study, Cronbach's Alpha value of the Rathus Assertiveness Inventory was determined as .805.

In the adaptation study conducted by Voltan (1980), the scoring of the scale is in the range of -3 +3 and the total scores that can be obtained are between -90 and +90. However, in later studies, a different type of scoring has been used for an easier statistical calculation. The scoring process in these studies was made between 1-6, and therefore, the total scores that could be obtained from this scale have been between 30-180. In this study, the 1-6 score range was used. With the Rathus Assertiveness Inventory, it was aimed to determine the assertiveness levels of individuals. A score of 30-80 taken from the scale was expressed as shy, 80-130 as moderately shy, and 130-180 as assertive. The Cronbach's Alpha value for the whole study was determined as .837.

Analysis of Data

IBM SPSS 20.0 package program was used to analyze the data. While investigating the conformity of the data to normality, if the sample size is less than 50, the Shapiro-Wilk test should be used but if it is more, the Kolmogorov-Smirnov (K-S) test should be used (16). As a result of the Kolmogorov-Smirnov (K-S) test conducted to determine whether the data was normally distributed or not, it was found that the data were normally distributed ($p > .05$). For this reason, besides descriptive statistics, T Test for Independent Groups has been applied in paired measures and Single Factor Analysis of Variance (ANOVA) has been applied in more than two variables during the analysis of the data.

On the other hand, Pearson correlation test was applied in order to determine whether there was a relationship between sub-dimensions of the 2 scales used in this study. Büyüköztürk (2018) found that as a result of the Pearson correlation test, the absolute value of the correlation coefficient between 0.70-1.00 means a high relation; between 0.30-0.70 means a moderate relation and between 0.00- 0.30 means a low relation (16). In this study, this information was used in order to decide at what level the relationship is.

Results

In Table 2, the distribution of the problem solving skills sub-dimensions and problem solving skill total scores of the participants are examined in general. As a

Table 2. Results Regarding the Mean and Standard Deviation Values of the Participants' Problem Solving Skills Sub-Dimensions and Total Scores

Problem Solving Skills Perception Scale Sub-Dimensions	N	\bar{X}	Sd	Min	Max	Score Limit
Hasty Approach	139	26.85	5.41	14.00	41.00	09-54
Thinking Approach	139	10.37	3.93	5.00	20.00	05-30
Avoidant Approach	139	7.71	3.59	4.00	20.00	04-24
Evaluative Approach	139	6.79	2.62	3.00	16.00	03-18
Confident Approach	139	12.27	4.15	6.00	23.00	06-36
Planned Approach	139	8.21	2.80	4.00	17.00	04-24
Total Score	139	75.00	16.32	43.00	110.00	32-192

result of this analysis, it was observed that the participants had a point average of \bar{X} = 26.85 in hasty approach sub-dimension, \bar{X} = 10.37 in thinking approach sub-dimension, \bar{X} = 7.71 in avoidant approach sub-dimension, \bar{X} = 6.79 in evaluative approach sub-dimension, \bar{X} = 12.27 in confident approach sub-dimension, \bar{X} = 8.21 in planned approach sub-dimension and \bar{X} = 75.00 in problem solving total score.

Considering " \bar{X} = 75.00" points received from the total problem solving inventory of the participants included within the study (the lowest score that can be received from the whole inventory is 32 and the highest is 192), it can be said that the participants have moderate problem solving skills. Considering the lowest and highest values that can be received from the inventory in all sub-dimensions of the problem-solving inventory, it can be argued that the participants have problem-solving skills which are below moderate level in all sub-dimensions of the problem-solving inventory.

The general distributions of the assertiveness scores of the participants are examined in Table 3. As a result of this examination, the average assertiveness score of the participants is observed as \bar{X} = 99.71. Accordingly, it can be said that the assertiveness levels of the participants are moderately shy (considering

that the lowest score that can be received from the scale is 30 and the highest score is 180).

When the average scores of the subscales according to the gender variable are examined, it is observed that in hasty approach females have 27.02 ± 4.93 , males have 26.78 ± 5.63 , in thinking approach females have 10.13 ± 4.39 , males have 10.47 ± 3.72 , in avoidant approach females have 7.48 ± 3.54 males have 7.82 ± 3.63 , in evaluative approach females have 6.13 ± 2.58 , males have 7.09 ± 2.60 , in confident approach females have 12.39 ± 4.80 males have 12.21 ± 3.86 , in planned approach females have 8.41 ± 3.49 males have 8.12 ± 2.45 . When the average scores of the problem solving inventory are examined according to the gender variable, it is seen that there is a significant difference in favour of males in the evaluative approach ($p = 0.048$; $p < 0.05$).

When the average scores of the subscales according to the marital status variable are examined, it is observed that in hasty approach married have 26.47 ± 5.39 , single have 27.50 ± 5.43 , in thinking approach married have 10.34 ± 3.57 , single have 10.43 ± 4.52 , in avoidant approach married have 7.70 ± 3.68 single have 7.74 ± 3.48 , in evaluative approach married have 6.56 ± 2.20 , single have 7.19 ± 3.21 , in confident approach married have 11.96 ± 3.96 single have 12.80 ± 4.46 , in planned approach

Table 3. Results Regarding Mean and Standard Deviation Values of Assertiveness Scores of the Participants

	N	\bar{X}	Min	Max	Sd	Score Limit
Assertiveness	139	99.71	35.00	132.00	16.19	30-180

Table 4. T Test Analysis Results of the Problem Solving Inventory Subscale Mean Scores According to Socio-Demographic Characteristics of the Participants

Variables		Hasty Approach Mean±Sd	Thinking Approach Mean±Sd	Avoidant Approach Mean±Sd	Evaluative Approach Mean±Sd	Confident Approach Mean±Sd	Planned Approach Mean±Sd
Gender	Female	27.02±4.93	10.13±4.39	7.48±3.54	6.13±2.58	12.39±4.80	8.41±3.49
	Male	26.78±5.63	10.47±3.72	7.82±3.63	7.09±2.60	12.21±3.86	8.12±2.45
p		.808	.640	.614	.048*	.818	.620
Marital Status	Married	26.47±5.39	10.34±3.57	7.70±3.68	6.56±2.20	11.96±3.96	8.03±2.50
	Single	27.50±5.43	10.43±4.52	7.74±3.48	7.19±3.2	12.80±4.46	8.52±3.26
p		.280	.903	.949	.221	.254	.352
School Worked	Secondary School	27.04±5.44	10.82±4.17	8.06±3.54	6.85±2.55	12.45±4.37	8.29±2.93
	High School	26.64±5.41	9.84±3.58	7.31±3.64	6.73±2.73	12.06±3.91	8.12±2.66
p		.666	.143	.219	.791	.583	.726

Table 5. Analysis of Variance (Anova) Results of the Problem Solving Inventory Sub-Dimensions Average Scores of the Participants According to the Age Variable

Variables		Hasty Approach Mean±Sd	Thinking Approach Mean±Sd	Avoidant Approach Mean±Sd	Evaluative Approach Mean±Sd	Confident Approach Mean±Sd	Planned Approach Mean±Sd
Age	24-32	27.58±5,93	10.00±4.13	7.52±4.03	6.71±2.78	12.32±4.56	8.33±3.31
	33-41	26.35±4,68	10.48±4.00	7.80±3.57	6.75±2.42	12.53±4.08	8.23±2.63
	42-50	26.67±5.75	10.64±3.16	8.03±2.80	6.78±2.43	11.60±3.65	7.85±2.13
	51 and older	24.00±7.07	13.50±7.77	6.00±2.82	10.50±2.62	13.00±2.82	9.50±2.12
p		.572	.595	.839	.259	.803	.809

married have 8.03 ± 2.50 single have 8.52 ± 3.26 . When the average scores of the problem solving inventory are examined according to the marital status variable, it is seen that there is no significant difference between the sub-dimensions of the problem solving inventory scale according to marital status ($p > 0.05$).

When the average scores of the subscales according to the school variable are examined, it is observed that in hasty approach secondary school have 27.04 ± 5.44 high school have 26.64 ± 5.41 , in thinking approach secondary school have 10.82 ± 4.17 , high school have 9.84 ± 3.58 , in avoidant approach secondary school have 8.06 ± 3.54 , high school have 7.31 ± 3.64 , in evaluative approach secondary school have 6.85 ± 2.55 , high school have 6.73 ± 2.73 , in confident approach secondary school have 12.45 ± 4.37 high school have 12.06 ± 3.91 , in planned approach secondary school have 8.29 ± 2.93 , high school have 8.12 ± 2.66 . When the average scores of the problem solving inventory are examined according to the school variable, it is seen that there is no significant difference between the sub-dimensions of the problem solving inventory scale according to school worked ($p > 0.05$).

Considering the average scores of the problem solving inventory scale by age variable; it is observed

that within the 24-32 age range, the hasty approach was 27.58 ± 5.93 , the thinking approach was 10.00 ± 4.13 , the avoidant approach was 7.52 ± 4.03 , the evaluative approach was 6.71 ± 2.78 , the confident approach was 12.32 ± 4.56 , the planned approach was 8.33 ± 3.31 , within the 33-41 age range, the hasty approach was 26.35 ± 4.68 , the thinking approach was 10.48 ± 4.00 , the avoidant approach was 7.80 ± 3.57 , the evaluative approach was 6.75 ± 2.42 , the confident approach was 12.53 ± 4.08 , the planned approach was 8.23 ± 2.63 , Within the 42-50 age range, the hasty approach was 26.67 ± 5.75 , the thinking approach was 10.64 ± 3.16 , the avoidant approach was 8.03 ± 2.80 , the evaluative approach was 6.78 ± 2.43 , the confident approach was 11.60 ± 3.65 , the planned approach was 7.85 ± 2.13 and in the age range of 51 and above the hasty approach was 24.00 ± 7.07 , the thinking approach was 13.50 ± 7.77 , the avoidant approach was 6.00 ± 2.82 , the evaluative approach was 10.50 ± 2.62 , the confident approach was 13.00 ± 2.82 , the planned approach was 9.50 ± 2.12 . Considering the sub-dimensions of the problem solving inventory according to the school variable, it is seen that there is no statistically significant difference between them ($p > 0.05$).

Table 6. Analysis of Assertiveness Scores Regarding Demographic Features of Physical Education and Sports Teachers Participating in the Study (T Test)

		N	X	Sd	p
Gender	Female	43	96.86	19.16	.16
	Male	96	101.00	14.60	
Marital Status	Married	88	102.03	13.39	.02*
	Single	51	95.72	19.65	
School Worked	Secondary School	75	99.45	17.41	.83
	High School	64	100.03	14.76	

Considering the assertiveness score averages of the physical education and sports teachers who participated in the study according to the gender variable; it is observed that in gender variable, females were 96.86 ± 19.16 males were 101.00 ± 14.60 ; in marital status married were 102.03 ± 13.39 single were 95.72 ± 19.95 and in school variable secondary school were 99.45 ± 17.41 and high school were 100.03 ± 14.76 . When the assertiveness average scores are analyzed according to the marital status variable, it is seen that there is a significant difference in favour of the average scores of married people ($p=0.02$; $p<0,05$).

Considering the average scores of assertiveness levels by age variable, it is observed that the age range 24-32 is 95.28 ± 20.08 , the age range 33-41 is 101.19 ± 12.23 , the age range 42-50 is 104.96 ± 13.02 and the age range 51 and older is 102.50 ± 21.92 . When the assertiveness score averages are examined according to the age variable, it is seen that there is no significant difference ($p=0,06$; $p>0.05$).

Looking at the relationship between the problem solving inventory and assertiveness levels, it is seen that there is a high-level positive relationship between the thinking approach and the planned approach ($r=.711$; $p<.01$). There is a positive and moderate relationship between the evaluative approach and the planned approach ($r=.533$; $p<.01$), there is a positive and

moderate relationship between the thinking approach and the evaluative approach ($r=.586$; $p<.01$), there is a positive and moderate relationship between confident approach and planned approach ($r=.637$; $p<.01$), there is a positive and moderate relationship between confident approach and evaluative approach ($r=.457$; $p<.01$), there is a positive and moderate relationship between confident approach and thinking approach ($r=.677$; $p<.01$), there is a positive and moderate relationship between hasty approach and assertive approach ($r=.555$; $p<.01$), there is a negative and moderate relationship between hasty approach and planned approach ($r=-.333$; $p<.01$), there is a negative and moderate relationship between avoidant approach and planned approach ($r=.319$; $p<.01$), there is a negative and moderate relationship between avoidant approach and thinking approach ($r=-.311$; $p<.01$), and there is a positive and moderate relationship between avoidant

Table 7. ANOVA Test Results of Assertiveness Levels of Participants by Age Variable

		N	X	Sd	p
Age	24-32	53	95.28	20.08	.06
	33-41	56	101.19	12.23	
	42-50	28	104.96	13.02	
	51 and older	2	102.50	21.92	

Table 8. Pearson Correlation Analysis Showing the Relationship Between Problem Solving Inventory and Assertiveness Levels

		Assertiveness	Planned	Evaluative	Thinking	Confident	Hasty	Avoidant
Assertiveness	Pearson Sig. (2-tailed)	1						
Planned	Pearson Sig. (2-tailed)	-.085 ,321	1					
Evaluative	Pearson Sig. (2-tailed)	.092 ,284	.533** ,000	1				
Thinking	Pearson Sig. (2-tailed)	.027 ,748	.711** ,000	.586** ,000	1			
Confident	Pearson Sig. (2-tailed)	.051 ,548	.637** ,000	.457** ,000	.677** ,000	1		
Hasty	Pearson Sig. (2-tailed)	.555* ,000	-.333** ,000	-.090 ,289	-.275** ,001	-.108 ,205	1	
Avoidant	Pearson Sig. (2-tailed)	.081 ,345	-.319** ,000	-.213* ,012	-.311** ,000	-.234** ,006	.312** ,000	1

(*) correlation is significant at 0.05 level. $p<.05$

(**) correlation is significant at 0.01 level. $p<.01$

approach and hasty approach ($r=.312$; $p<.01$). It was found that the relationship between other sub-dimensions was low.

Discussion

In the study conducted to examine the problem solving skills and assertiveness characteristics of physical education teachers working in secondary and high schools, the findings of physical education teachers working in Çayirova district of Kocaeli province and Adapazarı district of Sakarya province have been discussed in this section. When the findings obtained in the study were examined, there was a significant difference in favour of males in the evaluative approach of problem solving skills according to the gender variable, while there was no significant difference in other sub-dimensions (Table 4). The reason for this may be that males use the processes of understanding, interpreting and commenting on events more effectively, since they are more active in society. In a study conducted on university students, Şeker (2019) found that the evaluative approach in favour of males in terms of gender variable is an important fact and it was stated that this might be related to the way of growing in patriarchal societies (17). Esen (2012) found that the gender factor is important in his study conducted on school administrators (18). It is seen that there are also studies that are not parallel to our study, in other words, there are studies which do not find a difference in terms of gender variable (19; 20; 21; 22; 23). The reason for this difference can be thought to stem from the different perception of the concept of problem solving in some societies or cultures (23).

When the relationship between the problem solving skills sub-dimensions according to the marital status variable is examined, it is seen that there is no significant difference (Table 4). When the literature is reviewed, it is seen that there are studies that are parallel to our study (24; 25; 26; 27). Akin *et al.* (2007) found that marital status affects decision-making skills in their study conducted on nursing students who continued their university education, and it was stated that the reason for this may be that marriage imposes a sense of responsibility on

individuals and that individuals are becoming more mature over time (28).

It is seen that there is no significant difference between problem solving skills according to the school variable (Table 4). Çolhan (2006), in his study with manager nurses, concluded that the institution worked is important and stated that the institution in which the nurses are working would contribute positively to the multi-directional problem-solving skills of these nurses needed due to their duties and working areas (29).

When the relationship between the sub-dimensions of problem solving skills according to the age variable is examined, it is seen that there is no significant difference (Table 5). Studies on the subject (18; 30) concluded that age does not affect problem solving skills. Korkut (2002), argued that age is important for high school students' problem solving skills, and their experience increases as age increases and this situation affects their problem solving skills (31).

When looking at the gender variable in terms of assertiveness levels, it is seen that there is no significant difference (Table 6). Erşan and Doğan, Efe, Adalı (2002) concluded in their studies that females have higher assertiveness levels compared to males (32; 33; 34). Özşaker and Adsız (2010), in their study with elite basketball players within the 12-14 age group, found that the assertiveness levels of males were higher than females, and they suggested that the reason for this may be that females enter puberty earlier than males (35).

When the marital status variable is examined in terms of assertiveness levels, it is seen that there is a significant difference in favour of married people (Table 6). It can be thought that the reason for this might be the development of a sense of responsibility in married people towards their family and the support given by the spouses to each other. Bal (2003), found that the assertiveness levels of nurses who were married were higher than those of single nurses in their study conducted on nurses working in hospitals (36). This result is in parallel with our study.

When we look at the school variable in terms of assertiveness levels of physical education teachers, it has been determined that there is no significant difference (Table 6). In his study conducted in order to examine the assertiveness levels of physical education

teachers and other branch teachers; Kırgil (2015), found that the school does not have an effect on the level of assertiveness (37).

When looking at the assertiveness level of physical education teachers according to the age variable, there is no significant difference (Table 7). Gacar (2011), found that age does not affect the assertiveness level of individuals in his study conducted on physical education and sports instructors (38). Alagül (2004), found that the assertiveness level of athletes did not change according to age groups in his study examining the assertiveness levels of athletes in different branches (39).

Conclusion

It has been recognized that the evaluative approach is important in the problem solving skills of physical education teachers working in secondary and high schools and it has been concluded that the culture in which the individual is living and his/her manner of growing also affects the problem solving skills of that individual. Regarding the assertiveness levels of physical education teachers, it was observed that married people were more assertive. The assertiveness levels of the participants are moderately shy. As a result, it was determined that physical education teachers' assertiveness levels and problem solving skills differ according to various variables. In addition, it is thought that this study will contribute to the literature, since problem solving skills and assertiveness characteristics can be developed with various programs.

Conflicts of interest: The authors declare that there is no conflict of interest about this manuscript.

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Correspondence

Adem Karatut
Kocaeli University,
Institute of Health Sciences,
Kocaeli/Turkey.
Email: ademkaratut4641@gmail.com