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Examining the Attitudes of Turkish Students Towards Scientific Field Trips

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Abstract
In this research, it is aimed to examine the attitudes of Turkish students attending middle school according to various variables (gender, class level, academic achievement, daily study time, maternal education status, maternal occupation, father education status, father's profession, family income status, number of people living in households). The research is designed according to one of the quantitative research methods, the scanning pattern. The sample group of the study consists of 452 secondary school students who were educated in the central district of Kilis province in the fall semester of the 2021-2022 academic year, aged between 10 and 13, selected using simple unelected sampling method. The data of the research were analyzed using the SPSS 23 program. The research findings reveals that middle school students have a high attitude towards scientific field trips. Student attitudes towards the learning tool and adventure direction, which are the sub-dimensions of scientific field trips, are moderate; student attitudes towards social and environmental aspects are high. It was also concluded that the attitudes of secondary school students towards scientific field trips differed importantly according to gender, academic achievement, study time, parental education level and occupation and number of households. However, it was detected that the attitudes of middle school students towards scientific field trips did not differ importantly according to class level and economic level variables.

Keywords: Field Trips, Attitude, Middle School, Turkey

1. Introduction

Learning and teaching environments are needed that can ensure that information is obtained in an easy, understandable and fun way during the education process. One of these environments is undoubtedly out-of-school teaching environments. Out-of-school teaching environments provide primary hand resources, enabling individuals to interact with their surroundings. These environments enable individuals to develop positive attitudes/values and new perspectives by acquiring permanent information. Out-of-school teaching (OSLT) is defined as teaching activities carried out within the framework of the curriculum by taking advantage of institutions and environments outside the school building (Salmi, 1993). Undoubtedly, the way to access out-of-school teaching environments is through scientific field trips (Yıldırım, 2020). In other words, field trips can be seen as

an integral part of out-of-school learning environments (Funderburk, 2016). As a matter of the fact, scientific field trips come to mind first when it comes to out-of-school teaching (Çengelci, 2013; Öner, 2015). “Scientific field trips are defined as activities organized by the school to see any place or the results of an event/event that took place/occurred in that place or to see the physical and human characteristics of that place and to examine them directly in their real environment in line with the gains in the curriculum” (Alkış, 2008, p.2). Scientific field trips, which have a very broad definition, are also defined as “a way of teaching an event or presence in a planned and purposeful way in the natural conditions in order to complete in-class studies and make it more meaningful” (Aydın, 1998, p. 121).

The main purpose of scientific field trips is to give meaning to education and to make education more vivid (Korkmaz, 2006, p.49). In this context, it is important to emphasize that one of the teaching approaches that is one of the student-centered approaches and which provides students with first-hand sources of concepts, subjects or achievements in the course is scientific field trips. These trips are very important for students to comprehend the theoretical knowledge they have acquired in the classroom by examining them in a concrete way on site (Atayeter & Tozkoparan, 2016). In other words, scientific field trips are very important activities as they provide first-hand experiences to students outside of traditional teaching (Flexer & Borun, 1984).

Hore (2007) lists the most important objectives of scientific field trips, which are carried out in a planned and programmatically planned and programmatically manner for educational purposes in schools, whose main goal is to provide the learner with an out-of-school teaching experience and to make the learning permanent:

1) Scientific field trips enable students to understand both the place of living and the different environments visited and to improve their knowledge of those places.
2) Scientific field trips give students the chance to explore the present effects of changes and solutions to current problems, rather than the old information already described in textbooks.
3) Scientific field trips allow students to develop skills such as reading and interpreting maps, collecting and recording data, math skills, drafting, analyzing, thinking and connecting.

There is a study that reveals that scientific field trips made in line with the achievements of the curriculum have many benefits for the student and contribute many to developing the cognitive / sensory / psychomotor skills of students at various levels (Açar, 2010; Ballantyne & Packer, 2009; Bozdoğan & Yalçın, 2006; DeWitt & Storksdieck, 2008; Farmer, Knapp & Benton; 2007; Gennaro, 1981; McKenzie, 1986; Göğebakan, 2008; Gökkaya & Yeşilbursa, 2009; Güler, 2011; Hutzel & Goodman, 2004; Karakaş-Özür, 2010; Kızıltaş & Sak, 2018; Knapp & Barrie, 2001; Köseoğlu, Mercan & Pehlivanoğlu, 2020; Orion & Hofstein, 1994; Özgen, 2011; Rudman, 1994; Sebasto & Cavern, 2006).

Scientific field trips are highly useful activities as they support students' high-level thinking skills, improve decision-making skills based on real places and subjects, and evaluate other people's values and attitudes (Alkış, 2008). As mentioned earlier, scientific field trips have many benefits. One of them is that the idea of observation, which is one of the most basic and important of the scientific research method, is gradually beginning to settle in students. To this it is necessary to add another important benefit, such as the deconstruction of the idea of establishing a relationship between the environment and people and events (Doğanay, 1993).

As a matter of fact, it is known that scientific field trips have many educational benefits during the education process. For instance, it can be stated that such activities provide students with a real-life experience in natural learning areas and help them gain a positive attitude towards the environment (Doğan, Çiçek & Saraç, 2018). Most teachers see scientific field trips as an important part of education (Foskett, 2000). For many students, scientific field trips offer an experience they will never forget. Field trips increase students' motivation for learning by improving their social communication and psycho-motor skills. The natural environment provides new learning opportunities for students to be active on field trips (Bronwyn Lewis, 2017). Scientific field trips enable students to understand and understand the knowledge they have learned in the classroom, while increasing their scientific knowledge of the subject and supporting their high-level thinking skills for their subsequent learning (Behrendt &

Franklin, 2014). Field trips provide an opportunity for students to support their academic achievements as well as strengthen the social relationship between students and give them the opportunity to learn by living by doing (Funderburk, 2016). Participating in scientific field trips increases students' self-confidence (Köseoğlu et al., 2020) as well as positively increasing attitudes towards scientific field trips (Demir, 2021). In the study conducted by Demir (2021), it was concluded that the attitudes and motivations of the students who participated in scientific field trips, their awareness of cultural heritage, their attitudes towards scientific field trips and their academic achievements in the field of learning "Culture and Heritage", which is one of the learning areas of this course, increased positively.

When the literature is examined, it is seen that many studies are carried out by various disciplines (classroom teaching, preschool, history, religious culture, physics, law, biology, etc.) especially geography, social studies and science for scientific field trips. These studies are generally based on literature review, student and teacher opinions and experimental studies. However, it is seen that the attitudes of middle school students towards scientific field trips and the research in which these attitudes are examined according to various variables are quite limited. In this context, only one study has been reached that examines the attitudes of middle school students towards scientific field trips in a national sense. In this study conducted by Çavuş, Öztuna Kaplan & Laçin-Simsek (2019), the attitudes of the students who participated in the trips carried out within the scope of the science and art center were examined. In the study, it was detected that the attitudes of the students who participated in scientific field trips were generally high.

Scientific field trips are an instructive tool in expanding the concepts learned and providing motivation for learning. Scientific field trips are perceived as more instructive, but there is also an environmental, social and adventure aspect to field trips (Orion & Hofstein, 1991). Undoubtedly, it is important for education to determine the attitudes of students towards the educational, social, environmental and adventure aspects of scientific field trips and to identify the variables that have an impact on these attitudes. Although attitudes are often the subject of social psychology because they include social and psychological elements, this concept is often included in educational research today. Because many studies on education in recent years reveal that the attitudes of the individual towards the material to be learned, the teacher, the subject area in which he/she is studying affect school achievements. In other words, according to the findings obtained from research in the field of education, the attitude of the person towards the material to be learned, the teacher and the subject area affects the school success (Pehlivan, 1994). This situation shows how important it is to determine the attitudes of students during the education process. As a matter of fact, based on the importance of scientific field trips in the educational process, the aim of the current research is to reveal various variables that are thought to differ on the attitudes and attitudes of Turkish students attending secondary school towards scientific field trips. In this context, the scale developed by Orion and Hofstein (1991) to measure students' attitudes regarding scientific field trips is very important in this field. With this measuring tool adapted to Turkish by Tortop (2013), students' attitudes towards scientific field trips were measured.

1.1 The Purpose of The Research

In this research, it is aimed to determine the attitude levels of middle school students towards scientific field trips and to examine their attitudes according to various variables (gender, class level, academic achievement, daily study time, maternal education status, maternal occupation, father education status, father's profession, family income status, number of people living in the household). As a matter of fact, when the litearture is examined, there are scientific studies that show that various variables such as gender, academic achievement, education level and profession of parents, socioeconomic level of the family are effective on the attitudes of the students. For instance, the study conducted by Kılıç and Girgin (2019) concluded that gender, academic achievement, maternal and parental education status and profession and the socioeconomic status of the family were influential on the attitudes of middle school students towards the environment.

In the current research based on the literature; It is thought that the variables "gender, class level, academic achievement, daily study time, maternal education status, maternal occupation, father's education status, father's profession, family income status, number of people living in households" can make a difference. In this context,

the main problem question of the research is detected as follows: “What is the level of attitudes of middle school students towards scientific field trips and do their attitudes differ importantly according to various variables (gender, class level, academic achievement, daily study time, maternal education status, maternal occupation, father education status, paternal profession, family income status, number of people living in the household)?”

2. Method

The current research is designed according to the scanning pattern, which is one of the quantitative research methods. Screening research patterns are “quantitative research patterns in which researchers gather information by applying scanning to a sample group or the entire universe to explain the attitudes, views, behaviors or characteristics of a universe” (Creswell, 2019, p.481).

2.1 Participant Characteristics

This research was created in the fall semester of the 2021-2022 academic year with 452 secondary school students aged between 10 and 13 who were studying in the central district of Kilis province. Students were selected according to simple random sampling method. In this sampling method, all units in the universe have an equal or independent chance of being selected for the sample (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2018, p. 85). Tavşancıl (2010) describes “50 of the sample size as very weak, 100 as weak, 200 as medium, 300 as good, 500 very good and 1000 excellent.” Accordingly, it can be said that the sample size in this research is very good. The demographic characteristics of the students participating in the current study are given in Table 1.

Table 1: Demographic characteristics of middle school students

Variable	Category	n	%
Gender	Female	248	54.9
	Male	204	45.1
Class level	5. grade	140	31
	6. grade	164	36.3
	7. grade	148	32.7
Academic achievements	Low	64	14.2
	Medium	72	15.9
	Good	144	31.9
	Very good	172	38
Study time	One\two hours	127	28.1
	Two\three hours	106	23.4
	Three\four hours	102	22.6
	More than four hours	117	25.9
Maternal education level	Primary school	96	21.2
	Middle school	120	26.6
	High school	175	38.7
	Undergraduate	61	13.5
Mother's profession	Housewife	321	71
	Private sector employee	75	16.6
	Public employee	56	12.4
Paternal education level	Primary school	75	16.6
	Middle school	116	25.7
	High school	175	38.7
	Undergraduate	86	19
Father’s profession	Unemployed	93	20.6
	Employee	107	23.7
	Artisan	144	31.8
	Public employee	108	23.9

	Medium	176	38.9
Family income status	Good	132	29.2
	Very good	144	31.9
	Three people	106	23.4
Number of households	Four people	140	31
	Five or more	206	45.6

2.2 Data Collection Tools

Data were collected through the "personal information form" and "scientific field trip attitude scale" in order to obtain the necessary data from the students.

2.2.1. Personal Information Form

When determining the demographic characteristics of the sample group, factors that may differ in the attitudes of the students towards scientific field trips were analyzed. As a result of the field writing scan, it was detected that various variables such as gender, class level, academic success, daily study time, maternal education status, maternal occupation, father's education status, father's profession, family income status and number of people living in the household can make a difference on the attitudes of students towards scientific field trips. In this context, a "Personal Information Form" containing these variables was created by the researcher.

2.2.2 Scientific Field Trip Attitude Scale

DFA result indexes of the scientific field trip attitude scale (SFTAS) adapted to Turkish by Tortop (2013) X^2=516.3, df=238, p=.000; RMSEA, .06; X^2/df=2.16 NFI=.77; CFI=.86; GFI=.88; PCLOSE= .000. In line with these findings, it can be said that the model is a well compatible model. It can also be said that the Cronbach Alpha internal consistency coefficient is a reliable scale with a coefficient of .88 and total item correlation values ranging from .31 to .63. The "individualized learning direction" dimension found on the original scale was excluded from the adaptation study and the final scale consisted of four dimensions: "learning tool direction", "social direction", "adventure direction" and "environmental direction". After the Turkish version of SFTAS, which is in the type of quadruple likert (1=I completely disagree, 2= I do not agree, 3=I agree and 4=I fully agree), it has been detected that its use is appropriate in the research to be carried out on field trips due to its validity and reliability.

2.3 Data Collection Process

The data of the current research were collected in the central district of Kilis province during the fall semester of the 2021-2022 academic year. The data of the study were collected from students in selected middle schools using a simple non-selective sampling method. During the data collection process, the schools detected within the scope of the research were visited and the school administration informed about the research. Thus, data was collected through the sample group in accordance with the knowledge and permission of the school administration. The sampling group where the research was applied was also informed about the research. The research forms were then applied to the sample group. The research form completed in a face-to-face classroom environment was completed by the sample group within an average of 25 minutes. All kinds of guidance are given so that the sample group can easily understand and respond to the expressions on the measuring device. On the other hand, there was no intervention or guidance on which expression the sample group would prefer.

2.4 Analysis of Data

SPSS 23 program was used for the analysis of the data obtained within the scope of the research. The reliability of the measuring instrument was first tested before proceeding to the analysis of the data. In this context, the value of SFTAS's Cronbach's Alpha was found to be .80. Therefore, it has been decided that SFTAS makes reliable measurements, and that the analysis of the data can be started. After the reliability test, normality values were tested within the scope of the research. Analysis [(kurtosis= 1.753, swekness= -.972) and shapiro wilk and

kolmogorov smirnov values= .000 <.05)] revealed that the data did not show normal distribution. For this reason, non-parametric tests were used in statistical analyses. Accordingly, "Mann Whitney U" was made to examine whether the attitudes of middle school students to scientific field trips differed importantly by gender. "Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to class level, academic achievements, maternal education level, father education level, family income status and number of households. "Post Hoc Tamhane" test was applied to determine which groups the difference was between (Büyüköztürk, 2004).

3. Results

In this part of the current study, the relationship of the attitudes of middle school students towards scientific field trips according to the problem situation of the study according to gender, class level, academic achievement, daily study time, maternal education status, maternal occupation, father's education status, father's profession, family income status and number of people living in the household are analyzed and the findings for these variables are included. However, before we proceed to the analysis of the relationship of the attitudes of middle school students towards scientific field trips according to various variables, the findings regarding the attitude levels of middle school students towards scientific field trips were given.

3.1 Findings on Attitude Level for Scientific Field Trips

Some statistical analyses were carried out on the total scores obtained from SFTAS. In this context, the lowest score to be obtained from SFTAS prepared as 24 articles in the quadruple likert type is 24 and the highest score is 96. In the current study, the lowest score from the scale applied to 452 students was 39, while the highest score was 88. The difference between the lowest and highest score (ranj) was found to be 49. When the distribution of total scores obtained from SFTAS is examined, the arithmetic average is 71.99 ($\bar{X}$=71.99); 8.51 of the standard deviation; median (median) 74; mod value (peak value) was detected to be 65. The distortion coefficient, which refers to the distribution of the total scores obtained by SFTAS, was detected as -.972 and the pressure coefficient was 1.75.

In order to determine the level of attitudes of middle school students towards scientific field trips, the total scores of each student were calculated and averaged. Accordingly, the score in the range of 24-47 is low, the score in the range of 48-71 corresponds to the medium level, and the score in the range of 72-96 corresponds to the high level. When Table 1 is examined, it is seen that eight of the 452 students (1.8%) surveyed had low attitudes towards scientific field trips, 192 (42.5%) were moderate and 252 (55.7%) were high. The average attitude of students towards scientific field trips is $\bar{X}$=71.99. This finding shows that middle school students have a high level of attitudes towards scientific field trips.

Table 2: Attitude level for scientific field trips

Level	Range	n	%
Low	(24-47)	8	%1.8
Medium	(48-71)	192	%42.5
High	(72-96)	252	%55.7
Total	(27-108)	452	%100

N=452; $\bar{X}$=71.99; Ss=8.51

The level of attitudes of middle school students according to dimensions of SFTAS, which consists of four dimensions: "learning tool direction", "social direction", "adventure direction" and "environmental direction", was also analyzed in the study. In this context, the lowest score is 11 and the highest score is 44, since there are a total of 11 items in the "learning tool direction" dimension of SFTAS. However, it was detected that the lowest score of students of this size was 21 and the highest score was 40. When Table 3 is examined, it is seen that eight of the 452 students (1.8%) who participated in the study had low attitudes towards the "learning tool direction" dimension of scientific field trips, 360 (79.6%) were moderate and 84 (18.6%) were high. The average attitude of

the students towards this dimension is $\bar{X}$=30.60. This finding suggests that middle school students have moderate attitudes towards the "learning tool direction" dimension of scientific field trips.

Table 3: Attitude level towards the learning tool aspect of scientific field trips

Level	Range	n	%
Low	(11-22)	8	%1.8
Medium	(23-33)	360	%79.6
High	(34-44)	84	%18.6
Total	(27-108)	452	%100

N=452; $\bar{X}$=30.60; Ss=3.36

Since there are a total of five items in the "social aspect" dimension of SFTAS, the lowest score is five and the highest score is 20. However, it was detected that the lowest score of the students in this dimension was six and the highest score was 20. According to Table 4, 16 (3.5%) of the 452 students surveyed had low attitudes towards the "social aspect" dimension of scientific field trips, 180 (39.8%) were moderate and 256 (56.7%) were high. The average attitude of the students towards this dimension is $\bar{X}$=16.14. This finding indicates that middle school students have a high level of attitudes towards the "social aspect" dimension of scientific field trips.

Table 4: Attitude level towards the social aspect of scientific field trips

Level	Range	n	%
Low	(5-10)	16	%3.5
Medium	(11-15)	180	%39.8
High	(16-20)	256	%56.7
Total	(27-108)	452	%100

N=452; $\bar{X}$=16.14; Ss=2.81

Since there are a total of four items in the "adventure direction" dimension of SFTAS, the lowest score is four and the highest score is 16. In the current study, it was detected that the lowest score of students of this size was four and the highest score was 16. According to Table 5, 28 (6.2%) of the 452 students surveyed had low attitudes towards the "social aspect" dimension of scientific field trips, 224 (49.6%) were moderate and 200 (44.2%) were high. The average attitude of the students towards this dimension is $\bar{X}$=11.78. This finding indicates that middle school students have moderate attitudes towards the "adventure aspect" dimension of scientific field trips.

Table 5: Attitude level towards the adventure aspect of scientific field trips

Level	Range	n	%
Low	(4-8)	28	%6.2
Medium	(9-12)	224	%49.6
High	(13-16)	200	%44.2
Total	(27-108)	452	%100

N=452; $\bar{X}$=11.78; SS=2.01

Since there are a total of four substances in the "environmental aspect" dimension of SFTAS, the lowest score is four and the highest score is 16. In this study, it was detected that the lowest score of students of this size was four and the highest score was 16. According to Table 6, 20 (4.4%) of the 452 students surveyed had low attitudes towards the "environmental aspect" dimension of scientific field trips, 128 (28.3%) were moderate and 304 (67.3%) were high. The average attitude of the students towards this dimension is $\bar{X}$=13.46. This finding indicates that middle school students have a high level of attitudes towards the "environmental aspect" dimension of scientific field trips.

Table 6: Attitude level towards the environmental aspect of scientific field trips

Level	Range	n	%
Low	(4-8)	20	%4.4

Medium	(9-12)	128	%28.3
High	(13-16)	304	%67.3
Total	(27-108)	452	%100

N=452; $\bar{X}$=13.46; SS=2.50

3.2 Relationship Between Attitude to Scientific Field Trips and Gender

"Mann Whitney U" was made to examine whether the attitudes of middle school students to scientific field trips differed importantly by gender and the results reached are available in Table 7.

Table 7: Relationship between attitude to scientific field trips and gender

Gender	n	Class avr.	Row total	z	p
Female	248	242.76	60204.00	-2.921	.003
Male	204	206.74	42174.00		
Total	452				

U=21264.00; z=-2.921; p<0.5

According to the data in Table 7, it was detected that the attitudes of middle school students towards scientific field trips differed importantly by gender ($U_{21264.00}$=-2.921, p<.05). When we look at the averages of the rows, it is seen that this difference is in favor of the female students. According to these findings, it can be said that the attitudes of female students towards scientific field trips are more positive than male students.

3.3 Relationship Between Attitude to Scientific Field Trips and Class Level

"Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to the class level and the results reached are available in Table 8.

Table 8: Relationship between attitude to scientific field trips and class level

Class level	n	Row avr.	sd	X^2	p	Significant difference
Fifth grade	140	238.84				
Sixth grade	164	231.57	2	4.103	.129	----
Seventh grade	148	209.20				
Total	452					

X^2=4.103; sd=2; p>0.5

According to the data in Table 8, it was detected that the attitudes of middle school students towards scientific field trips did not differ importantly according to the class level (X^2=4.103; p>0.5). According to this finding, it is seen that the class level does not make any significant differentness on the attitudes of middle school students towards scientific field trips.

3.4 Relationship Between Attitude to Scientific Field Trips and Academic Success

"Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to their academic achievements and the results reached are available in Table 9.

Table 9: Relationship between attitude to scientific field trips and academic success

Academic achievements	n	Row avr.	sd	X^2	p	Significant differentness
Low (A)	64	184.38				
Medium (B)	72	207.06	3	13.440	.004	A-C
Good (C)	144	250.94				B-C

Very good (D)	172	229.85
Total	452	

X^2=13.440; sd=3; p<0.5

According to the data in Table 9, it was detected that the attitudes of middle school students towards scientific field trips differed importantly according to their academic achievements (X^2=13.440; p<0.5). The "Post Hoc Tamhane" test was applied to determine which groups the differentness was between. In the analysis, it was seen that the differentness was between students with good academic achievement grades and students with low and middle grades (Table 10). Considering the row averages and average differentness, it can be said that the differentness between these groups is in favor of students with good academic achievements. In other words, it is seen that the attitudes of middle school students towards scientific field trips differ from their academic achievements, especially those of students with good academic achievements, are more positive than students in the other category.

Table 10: Tamhane test result comparing attitude to scientific field trips in terms of academic success level

Variable	Category		Significant differentness	ss	p
Academic achievement	Low	Medium	-.333	1.44	.996
		Good	-3.861	1.26	.013*
		Very good	-1.860	1.23	.433
	Medium	Low	.333	1.44	.996
		Good	-3.527	1.21	.020*
		Very good	-1.527	1.18	.568
	Good	Low	3.861	1.26	.013*
		Medium	3.527	1.21	.020*
		Very good	2.000	.95	.153
	Very good	Low	1.860	1.23	.433
		Medium	1.527	1.18	.568
		Good	-2.000	.95	.153

*p<.05

3.5 Relationship Between Attitude to Scientific Field Trips and Daily Study Time

"Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to the daily study time. The results reached are available in Table 11.

Table 11: Relationship between attitude to scientific field trips and daily study time

Study time	n	Row avr.	sd	X^2	p	Significant differentness
Less than an hour (A)	127	200.04				
One\two hours (B)	106	207.78	3	15.727	.001	A-D
Three\four hours (C)	102	243.23				B-D
More than four hours (D)	117	257.59				
Total	452					

X^2=15.727; sd=3; p<0.5

According to the data in Table 11, it was detected that the attitudes of middle school students towards scientific field trips differed importantly according to the daily study period (X^2=15.727; p<0.5). The "Post Hoc Tamhane" test was applied to determine which groups the differentness was between. In the analysis, it was observed that the differentness was between students with an average daily study time of "more than four hours" and students with "less than one hour" and "one/two hours" (Table 12). When the averages of the rows and the average differentness are taken into account, it can be said that the differentness between these groups is in favor of students whose average daily study time is "more than four hours". In other words, it is fair to say that the attitudes of middle

school students towards scientific field trips differ from the duration of study, especially those whose study time is more than four hours.

Table 12: Tamhane test result where attitude towards scientific field trips is compared in terms of daily study time

Variable	Category		Significant differentness	ss	p
Average daily study time	Less than an hour	One\two hours	0.210	1.10	.998
		Three\four hours	-2.622	1.11	.090
		More than four hours	-2.888	1.07	.038*
	One\two hours	Less than an hour	-0.210	1.10	.998
		Three\four hours	-2.832	1.16	.074
		More than four hours	-3.099	1.12	.032*
	Three\ four hours	Less than an hour	2.622	1.11	.090
		One\two hours	2.832	1.16	.074
		More than four hours	-0.266	1.14	.996
	More than four hours	Less than an hour	2.888	1.07	.038*
		One\two hours	3.099	1.12	.032*
		Three\four hours	0.266	1.14	.996

*p<.05

3.6 Relationship Between Attitude to Scientific Field Trips and Maternal Education Level

"Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to the level of maternal education and the results reached are available in Table 13.

Table 13: Relationship between attitude to scientific field trips and maternal education level

Maternal education level	n	Row avr.	sd	X^2	p	Significant differentness
Primary school (A)	96	200.08				A-C
Middle school (B)	120	204.55	3	15.143	.002	A-D
High school (C)	175	243.01				B-D
Undergraduate (D)	61	263.88				
Total	452					

X^2=15.143; sd=3; p<0.5

According to the data in Table 13, it was detected that the attitudes of middle school students towards scientific field trips differed importantly according to the level of maternal education (X^2=15.143; p<0.5). The "Post Hoc Tamhane" test was applied to determine which groups the differentness was between. In the analysis, it was seen that the differentness was between the students whose maternal education level was undergraduate and the students who were in primary and middle school. In addition, significant differentness was found between students with a high school level of maternal education and students who were primary school students (Table 14). When the averages and average differentness are taken into account, it is seen that the differentness between these groups is in favor of students whose maternal education level is high school and undergraduate. In other words, it is fair to say that the attitudes of middle school students towards scientific field trips differ from the level of maternal education, especially those whose maternal education level is high school and undergraduate.

Table 14: Tamhane test result comparing attitude to scientific field trips in terms of maternal education level

Variable	Category		Significant differentness	ss	p
Maternal education level	Primary school	middle school	-1.868	1.14	.359
		High school	-4.019	1.05	.001*
		undergraduate	-5.490	1.36	.000*
	Middle school	Primary school	1.868	1.14	.359

	High school	-2.150	.98	.132
	undergraduate	-3.621	1.31	.030*
High school	Primary school	4.019	1.05	.001*
	middle school	2.150	0.98	.132
	undergraduate	-1.471	1.23	.636
undergraduate	Primary school	5.490	1.36	.000*
	middle school	3.621	1.31	.030*
	High school	1.471	1.23	.636

*p<.05

3.7 Relationship Between Attitude to Scientific Field Trips and Mother's Profession

"Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to the mother's profession and the results reached are available in Table 15.

Table 15: Relationship between attitude to scientific field trips and mother's profession

Mother's profession	n	Row avr.	sd	X^2	p	Significant differentness
Housewife (A)	321	210.23				
Private sector Employee (B)	75	257.75	2	18.001	.000	A-C
Public employee (C)	56	277.93				
Total	452					

X^2=15.143; sd=3; p<0.5

According to the data in Table 15, it was detected that the attitudes of middle school students towards scientific field trips differed importantly according to the mother's profession (X^2=15.143; p<0.5). The "Post Hoc Tamhane" test was applied to determine which groups the differentness was between. In the analysis, it was seen that the differentness between students whose mother profession is public employee and students whose mother's profession is housewife (Table 16). When the averages and average differentness are taken into account, it is seen that the differentness between these groups is in favor of the students whose mother education profession is public employee. In other words, it is observed that the attitudes of middle school students towards scientific field trips differ from the mother's profession, especially those who are public employees of the mother profession.

Table 16: Tamhane test result comparing attitude to scientific field trips in terms of mother's profession

Variable	Category		Significant differentness	ss	p
Mother's profession	Housewife	Private sector employee	-2.033	1.07	.143
		Public employee	-4.471	1.21	.001*
	Private sector employee	Housewife	2.033	1.07	.143
		Public employee	-2.438	1.48	.228
	Public employee	Housewife	4.471	1.21	.001*
		Private sector emp.	2.438	1.4	.228

*p<.05

3.8 Relationship Between Attitude to Scientific Field Trips and Father Education Level

"Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to the level of paternal education and the results reached are available in Table 17.

Table 17: Relationship between attitude to scientific field trips and father education level

Paternal education level	n	Row avr.	sd	X^2	p	Significant differentness
Primary school (A)	75	190.07				
Middle school (B)	116	209.72	3	13.061	.049	A-D
High school (C)	175	240.89				
Undergraduate (D)	86	251.43				
Total	452					

X^2=13.061; sd=3; p<0.5

According to the data in Table 17, it was detected that the attitudes of middle school students towards scientific field trips differed importantly according to the level of paternal education (X^2=13.061; p<0.5). The "Post Hoc Tamhane" test was applied to determine which groups the differentness was between. In the analysis, it was seen that the differentness was between the students whose father's education level was primary school and the students who were undergraduates (Table 18). When the averages and average differentness were taken into account, it was observed that the differentness between these groups was in favor of the students whose paternal education level was undergraduate. In other words, it can be said that the attitudes of middle school students towards scientific field trips differed from the father's education level, especially the attitudes of students with a paternal education level were more positive.

Table 18: Tamhane test result comparing attitude towards scientific field trips in terms of father education level

Variable	Category		Significant differentness	ss	p
Paternal education level	Primary school	Middle school	-0.631	1.25	.958
		High school	-2.074	1.16	.286
		undergraduate	-3.500	1.33	.045*
	Middle school	Primary school	0.631	1.25	.958
		High school	-1.442	1.01	.485
		undergraduate	-2.869	1.20	.082
	High school	Primary school	2.074	1.16	.286
		Middle school	1.442	1.01	.485
		undergraduate	-1.426	1.11	.576
	undergraduate	Primary school	3.500	1.33	.045*
		Middle school	2.869	1.20	.082
		High school	1.426	1.11	.576

*p<.05

3.9 Relationship Between Attitude to Scientific Field Trips and Father's Profession

"Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to the father's profession and the results reached are available in Table 19.

Table 19: Relationship between attitude to scientific field trips and father education level

Paternal education level	n	Row avr.	sd	X^2	p	Significant differentness
Unemployed (A)	93	204.89				
Employee (B)	107	184.29	3	17.558	.001	B-D
Artisan (C)	144	229.58				
Public employee (D)	108	256.98				
Total	452					

X^2=17.558; sd=3; p<0.5

According to the data in Table 19, it was detected that the attitudes of middle school students towards scientific field trips differed importantly according to the paternal profession (X^2=17.558; p<0.5). The "Post Hoc Tamhane"

test was applied to determine which groups the differentness was between. In the analysis, it was seen that the differentness was between students whose father's education profession was public employee and students whose father's profession was employee (Table 20). Considering the row averages and average differentness, it can be said that the differentness between these groups is in favor of students whose paternal profession is public employee. In other words, it can be said that the attitudes of middle school students towards scientific field trips differ from the father's profession, especially those whose father profession is public employees are more positive.

Table 20: Tamhane test result comparing attitude towards scientific field trips in terms of father education level

Variable	Category		Significant differentness	ss	p
Father profession status	Unemployed	Employee	2.320	1.19	.210
		Artisan	-0.075	1.11	1.000
		Public employee	-2.071	1.18	.304
	Employee	Unemployed	-2.320	1.19	.210
		Artisan	-2.396	1.07	.116
		Public employee	-4.391	1.14	.001*
	Artisan	Unemployed	0.075	1.11	1.000
		Employee	2.396	1.07	.116
		Public employee	-1.995	1.07	.245
	Public employee	Unemployed	2.071	1.18	.304
		Employee	4.391	1.14	.001*
		Artisan	1.995	1.07	.245

*$p<.05$

3.10 Relationship Between Attitude to Scientific Field Trips and Family Income Status

"Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to family income status and the results reached are available in Table 21.

Table 21: Relationship between attitude to scientific field trips and family income status

Family income status	n	Row avr.	sd	X^2	p	Significant differentness
Medium (B)	176	213.59				
Good (C)	132	247.89	2	5.397	.065	---
Very good (D)	144	222.67				
Total	452					

$X^2=5.397$; sd=2; $p>0.5$

According to the data in Table 21, it was detected that the attitudes of middle school students towards scientific field trips did not differ importantly according to the family income status ($X^2=5.397$; $p>0.5$). According to this finding, it can be said that the family income status does not make any significant differentness on the attitudes of middle school students towards scientific field trips.

3.11 Relationship Between Attitude to Scientific Field Trips and Number of Households

"Kruskal Wallis H" test was performed to examine whether the attitudes of middle school students towards scientific field trips differed importantly according to the number of households and the results reached are available in Table 22.

Table 22: Relationship between attitude to scientific field trips and number of households

Number of households	n	Row avr.	sd	X^2	p	Significant differentness
Three (A)	106	259.76				
Four (B)	140	221.19	2	9.325	.009	A-C

Five or more (C)	206	213.02
Total	452	

X^2=9.325; sd=2; p<0.5

According to the data in Table 22, it was detected that the attitudes of middle school students towards scientific field trips differed importantly according to the number of households (X^2=9.325; p<0.5). The "Post Hoc Tamhane" test was applied to determine which groups the differentness was between. In the analysis, it was observed that the differentness was between students with three households and students with five or more (Table 23). When the averages and average differentness are taken into account, it can be said that the differentness between these groups is in favor of students living in households of three. In other words, it can be said that the number of households varies on the attitudes of middle school students towards scientific field trips, especially as the number of households decreases, so does the attitudes of the students.

Table 23: Tamhane test result comparing attitude to scientific field trips in terms of number of households

Variable	Category		Significant differentness	ss	p
The number of households	Three	Four	1.840	1.08	.209
		Five or more	3.136	1.00	.006*
	Four	Three people	-1.840	1.08	.209
		Five or more	1.295	0.92	.341
	Five or more	Three people	-3.136	1.00	.006*
		Four people	-1.295	0.92	.341

*p<.05

4. Discussion

In the current research, attitude levels and attitudes of Turkish students attending middle school were examined according to various variables (gender, class level, academic success, daily study time, maternal education status, maternal occupation, paternal education status, father's profession, family income status, number of people living in households). In this context, the attitude levels of middle school students towards scientific field trips were analyzed and it was detected that they had a high level of attitude. When the attitudes of the students regarding the sub-dimensions of scientific field trips are examined, their attitudes towards the learning tool and adventure direction are moderate; attitudes towards social and environmental aspects were found to be at a high level. In this context, it is noteworthy that middle school students have a higher level of attitude towards the social and environmental aspects of scientific field trips. As a matter of fact, when the student opinions about the social aspect of scientific field trips such as "I would like to participate in field trips because it is so much fun, my favorite thing on field trips is adventures, I return with many experiences from field trips, I want to participate in more field trips because it helps to build class spirit, field trip is important because it helps me make more friends" is examined, it is fair to say that field trips for middle school students are quite fun in the educational process, forming the classroom spirit, enabling cooperation and making friends. This finding is similar to the findings in various researches that scientific field trips are quite fun and exciting (Ocak, Kuş & Küçükilhan, 2013; Tortop & Özek, 2013; Tutkun, Aydın-Kılıç, Balcı & Kök, 2019).

Although it is known that scientific field trips stand out in more instructive aspects (Orion & Hofstein, 1991) it can be said that the socialization aspect of scientific field trips is more prominent in many studies (Demir, 2021; Öner, 2015; Topçu, 2017).When the statements related to the environmental aspect of scientific field trips such as"I like to participate in field trips, because it is important for me to understand the environment I live in, the field trip increases people's awareness of environmental issues, I would like to see more field trips due to its contribution to nature conservation education, seeing similarities in different parts of my country strengthens my connection with my country" are examined , it is concluded that scientific field trips for middle school students also have an important place in terms of raising and protecting awareness about the environment, recognizing the immediate environment and ensuring commitment to the country of life.As a matter of fact, the finding that scientific field trips positively affected the attitudes and knowledge levels of the students in the studies of Topçu and Atabey

(2016, p. 508) especially in terms of people's carelessness towards the environment supports the finding of the current research. When the statements regarding the learning tool aspect of scientific field trips such as"Field trip helps to understand the subjects learned in the classroom, field trips are the best way to learn a topic, field trips are the most fun way to learn, but it is unfortunately important to show and visualize the concepts learned in the field trip class, the subjects learned in field trips remain in my mind for a long time, learning in the classroom is more effective than learning in the field trip, Field trip increases my liking of the subject processed in the course, I understand nature events better after observing them on the field trip'' are examined, it has been detected that one of the most effective ways to learn for middle school students is scientific field trips. At the same time, it was emphasized that scientific field trips made important contributions in the educational process such as better understanding, learning, permanence of the subjects learned by the students, making the subjects fun, embodying them and increasing the interest in the course. In many studies (Demir, 2021; Karakaş-Özür & Şahin, 2017; Topçu, 2017; Öner, 2015; Ballantyne & Packer, 2009; DeWitt & Storksdieck, 2008; Knapp & Barrie, 2001; Rudman, 1994) parallel with these findings, it has been detected that field trips have many contributions in the educational process such as ensuring the permanence of the learned knowledge, increasing interest in the course, making the course fun, embodying abstract information, enabling learning by living by doing, preparing the student for life and increasing the academic achievements of the students.

When the student opinions about the adventure aspect of scientific field trips such as "My favorite things on field trips are adventures, such as climbing mountains, crossing rivers, I like field trips with walking in them, I like field trips despite the difficulties on the roads" are examined, it is concluded that scientific field trips are seen as an important means of interacting with the natural environment for students. As a matter of fact, Doğanay (1993) places scientific field trips in a very important place in terms of rooting the idea of establishing a relationship between environment and human-event. Orion and Hofstein (1991) state that scientific field trips support students to interact one-on-one with the environment.

In addition, Topçu and Atabey (2016) emphasize that scientific field trips that seem important for environmental education offer students the opportunity to be intertwined with nature and learn by living by doing it. As mentioned above, the attitudes of middle school students towards scientific field trips were examined according to gender, class level, academic success, daily study time, maternal education status, parental education status, father's occupation, family income status, number of people living in the household. In this context, it has been concluded that the attitudes of students towards scientific field trips differ importantly according to gender, academic achievement, study time, parental education level and professions and number of households. On the other hand, it was detected that the attitudes of the students towards scientific field trips did not differ importantly according to the class level and economic level. Accordingly, it was detected that the attitudes of female students towards scientific field trips were more positive than male students. In addition, the study found that students whose parental education undergraduate and profession are public employees had higher attitudes towards scientific field trips than students in other groups. Moreover, the study concluded that as students' study time increased and the number of households decreased, their attitudes towards scientific field trips increased. As is known, the family environment of the child and the education he receives in this environment affect his personality structure, social and mental development (Sarıer, 2016). With the statement of field trip, a fun day full of learning and socializing with other individuals come to the minds in general (Kennedy, 2014). Therefore, it can be said that parents whose education status is undergraduate and whose profession is public employees, namely working parents, tend to learn and socialize by living more with their children's scientific field trips. Another similar finding is that students who spend too much time studying at home and have good academic success and students who live in households have increased attitudes towards scientific field trips. Therefore, it can be interpreted as that these students tend to learn and socialize by going out of home and school with scientific field trips and living with friends.

In conclusion, it was concluded that Turkish students attending middle school had higher attitudes towards scientific field trips, especially socialization and environmental attitudes. It was detected that gender, academic achievement, study time, parental education status and profession, family income status and number of households made a significant differentness in these attitudes of the students. It can be said that the results reached are quite significant when the findings of the current study and the studies of literature are evaluated together. Based on the findings of this research, the following recommendations can be made:

1) This research was carried out with 452 Turkish students attending secondary school. Therefore, similar studies can be done with different sample groups.
2) This research was carried out taking into account various variables that are thought to differ on students' attitudes towards scientific field trips such as gender, class level, academic achievement, daily study time, maternal education status, parental education status, father's profession, family income status, number of people living in households. Therefore, similar studies can be carried out in which different variables are measured.

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