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The Relationship between Social Sciences High School and Science High School Students' Multiple Intelligence Levels and Learning Styles

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Abstract

This study which used survey model aims to examine the relationship between the multiple intelligence and learning styles of the Social Sciences High School and Science High School students. Multiple Intelligence Inventory and Learning Styles Inventory were used as data collection tools, which was conducted on 761 students from Social Sciences High School and Science High School. Mann Whitney–U test and point-biserial correlation analysis were used for data analysis. According to the findings, in the comparison of Social Sciences and Science High School types, it was found that mathematical and naturalist intelligence scores were more dominant in Science High School students. It was found that there is a statistically significant difference between the types of schools in which students attended the study in sensing/intuitive learning style. When the relationship between students' learning styles and their scores on multiple intelligence was examined, there were positive relationships, albeit low, in all four learning style dimensions. In line with these data, it is thought that the dimensions of learning style and multiple intelligence, in which individual differences manifest the most, will be considered, and it is thought that students will bring awareness of their own individual differences and individual success.

Key words: Multiple intelligence, learning style, Science High School students, Social Science High School students

Introduction

What makes individuals different from each other in society; are the unique qualities of individuals. Individual differences include characteristics that vary from individual to individual. These differences observed in individuals are manifested by the combination of the behaviors obtained due to the diversity caused by the differences in genetic structure, thinking styles, abilities and similar characteristics. These differences may sometimes be the dressing style, sometimes an instrument he plays, things he likes to do, learning styles, or sometimes indispensable habits specific to them (Tomlinson, 2001). However, individuals' methods of understanding and processing information are also different from each other. Therefore, every individual is different. Many theories examining individual differences deal with these differences that make the individual unique (Chamorro-Premuzic, 2013).

One of the leading theories that emphasize the importance of individual differences is that students have different learning styles and intelligence areas. Multiple intelligence theory is one of the student-centered theories that suggest that individual difference is essential. To be successful in education and training, priority should be given to the student's presence in the center by keeping individual differences at the forefront. This theory originated in 1983 when Howard Gardner came up with the idea that everyone has different intelligence, each of which works uniquely. According to Gardner, a person can develop his intelligence and teach it to other individuals. Everyone has different intelligence fields and can increase each intelligence field to a certain level (Gardner, 1983). Gardner suggested that intelligence fields were studied in seven areas: Bodily/Kinesthetic, Interpersonal, Intrapersonal, Logical/Mathematical, Musical/Rhythmic, Verbal/Linguistic, and Visual/Spatial and in his later work, the fields of intelligence were studied in eight areas, adding the field of naturalist intelligence (Saban, 2005).

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Another theory that addresses individual differences is differences in learning style. The learning style concept emerged as a result of examining individual differences in learning (Kaplan & Kies, 1995). The concept of learning style defined in different ways, in its most general sense, is the learning preferences of the individual who learns (Erden & Altun, 2006). Learning styles, together with the individual's learning conditions and personal preferences in the process, are an essential factor in student success. In other words, learning styles are the way individuals make sense of information. Each learning style is independent of each other, and one is neither too good nor too bad from the other (Mutlu, 2006). The concept of learning styles was first proposed by Dunn in 1960. Dunn interpreted learning styles as learning the information learned by using unique methods and remembering them in this way when necessary (Boydak, 2001). In 1984, Kolb interpreted the learning style as the steps that the learner follows in receiving and processing information (Kolb & Kolb, 2005). On the other hand, Felder and Silverman interpreted the learning style as the learner's preferences in receiving and processing information (Felder and Silverman, 1988). According to Gregorc's model of learning styles, it is expressed that individuals consist of distinctive behaviors that provide information about their mental skills (Gregorc, 1982).

Intelligence and learning style are very different concepts. Intelligence is our method of processing information in different areas, while learning style is our choice of learning information (Krechevsky & Seidel, 1998). While some individual learns by communicating with other individuals (interpersonal intelligence), another individual can do it on their own (intrapersonal intelligence). While some individuals learn by living and experiencing (bodily/kinesthetic intelligence), another individual may unintentionally do it randomly. Some individuals make sense of the surrounding sounds (musical/rhythmic intelligence), while others can learn from the images they create in their minds (visual/spatial intelligence). Some combine similar objects in their minds through induction (logical/mathematical intelligence), while others perform learning through deduction by extracting shapes from pictures. Some individuals perform learning by writing stories and telling them (verbal/linguistic intelligence) while others perform learning by the ability to interpret the Environment, Nature (Naturalist intelligence) (Ismail, Raja Hussain & Jamaluddin, 2010). These different ways individuals obtain, store, and retrieve information are called the individual's learning style (Felder & Henriques, 1995).

Prashnig (2005) saw multiple intelligences as a way of communicating individual learning styles and expressed it as a necessity to identify different learning styles of students in order to help students develop different intelligence factors as much as possible and compared this relationship to an input-output relationship (Input: Learning Styles> < process> <Output: multiple intelligence areas). From this point of view, there is an explanation from specific learning styles to general multiple intelligences. For this reason, he suggested that the relationship between learning styles and multiple intelligence domains would be important in determining students' particular areas and interpreting them for their development.

Education aims to train individuals who can use the information obtained by using their characteristics to solve the problems they encounter in their daily lives. Individuals' methods of understanding and processing information are different from each other. For this reason, in today's education system, in order to prepare individuals for the future in line with the targeted purpose, education is given by considering the individual differences of the individual. For example, it is like traveling on the same road with differences, with a large or small, long or short, high or low vehicle in a busy traffic with many different types of vehicles. Everyone can continue their way by directing the vehicle in accordance with the traffic rules. Considering the personal differences of students, which constitute the main theme of learning process, is the most fundamental element that will ensure the process to be completed in a healthier and ultimately successful way. In each learning environment, there are students with different abilities, different intelligence areas, and different learning styles. The main purpose in the learning environment is to create a common learning environment despite individual differences. Learning in the desired style is achieved by considering the individual differences of the individual, organizing learning environments according to the learning style and dominant intelligence areas they have, and including their learning style (Güven & Kürüm, 2006).

Several studies have been conducted in the literature that the Theory of Multiple Intelligences and learning styles are examined together. Snyder (1999) analyzed the relationship between high school students' multiple intelligence and learning styles and revealed a low relationship. Tekiner (2005) examined the relationship between Turkish university students' multiple intelligence and learning styles, and the correlation results found a statistically significant relationship between interpersonal intelligence. Seifoori & Zarei (2011) examined the relationship between Iranian university students' multiple intelligence and learning styles and found significant differences. Baleghizadeh & Shayeghi (2014) analyzed the relationship between Iranian students' multiple intelligence types and learning styles in different age groups and found a statistically significant difference. Panahandeh, Khoshkhoonejad, Mansourzadeh & Heidari (2015) examined the relationship between university students' multiple intelligence and learning styles and determined significant differences between learning styles

and intelligence types. Aygül & Koç (2016) found a statistically significant difference between vocational high school students' multiple intelligence and their teaching styles. Şener & Çokçalışkan (2018) determined that most of middle school students' multiple intelligence and learning styles have a moderate positive correlation. Alrabah, Wu & Alotaibi (2018) examined the relationship between Kuwaiti college students' multiple intelligences and learning styles and indicated that while the participants' dominant learning styles were global, extroverted, hands-on, and visual, their dominant multiple intelligences were interpersonal, visual, and kinesthetic.

Studies that are searched both in terms of the type of school that students of the Social Sciences and Science High School choose, which are successful in the transition to secondary education exam, and in terms of variables such as dominant multiple intelligence domains and learning styles are rarely included in the literature. It is thought that the research is essential in terms of contributing to the organization of students according to the type of school, multiple intelligence areas and learning styles. To draw attention to this gap in the literature, the relationship between the multiple intelligence levels and learning styles of the Science High School and Social Sciences High School students was examined in this study. Also, Gardner (1993) mentions that each intelligence has its educational theory, while Denig (2004) suggests that the synthesis of multiple intelligences and learning styles will help people understand. This recommendation parallels Nelson's (1998) understanding that people who are intelligent in a field learn best with methods related to that intelligence. Based on this, by identifying the intelligence areas and learning styles of the students and discovering the relationship between them, appropriate tools to improve academic teaching and ensure optimum learning according to students' needs understanding can be identified more easily. It can also serve as an important auxiliary tool to introduce students' types of intelligence and learning styles in the education system, motivating them to realize their potential in achieving their desired learning goals. In this way, the importance of this study will increase as it guides teachers to students and future studies.

This aim of study is to determine the Relationship between Social Sciences High School and Science High School Students' Multiple Intelligence Levels and Learning Styles.

Subaims are as follows:

1- to determine the distribution of Social Sciences High School and Science High School Students' Multiple Intelligence domains
2- to determine the distribution of Social Sciences High School and Science High School Students' learning styles
3- to determine the relation level between Learning Styles and Multiple Intelligence areas of Social Sciences and Science High School student

Method

The relational survey model, one of the descriptive research models, was used in the study, which aims to reveal the relationship between the students' learning styles and the multiple intelligence areas in Social Sciences High School and Science High School by determining the students' learning styles and multiple intelligence areas. Relational survey model aims to determine the existence of co-change between two or more variables. In the relational survey model, whether the variables change together or not; If there is a change, it is tried to be determined how it happened (Karasar, 2011).

The study's sample is 9th, 10th, 11th and 12th grade students studying in Trabzon Science High School and Trabzon Social Sciences High School (Table 1).

Table 1 Distribution of Students by School

School Type	Grade				Total
	9	10	11	12	
Social Sciences High School	78	72	88	50	288
Science High Schools	82	90	100	201	473
Total	160	162	188	251	761

The necessary data was collected by applying "multiple intelligence areas inventory" and "learning styles inventory" to the participating students.

To find answers to the study's questions, the Multiple Intelligences inventory developed for third-, seventh-, and eleventh-grade students by Harms (1998) and adapted into Turkish by Oral (2001) was used to determine the students' multiple intelligences. In the study of Oral (2001), the Cronbach alpha coefficient was found to be 0.900. In this study, the Cronbach alpha coefficient was found 0.886. There are eight intelligence areas and ten expressions for each of these intelligence areas in the multiple intelligence inventory used. There are 80 expressions in total in the inventory. According to the answers given, the evaluation was made in 5 different categories. When evaluating, according to the preferences of the person, 1 " Strongly Disagree", 2 " Disagree", 3 " Neither Agree Nor Disagree", 4 "Agree" and 5 " Strongly Agree" were evaluated by scoring.

The Multiple Intelligence Inventory's score calculation is as follows; There are ten expressions in each sub-dimension. Since the expressions were scored between 1 and 5, the minimum score for ten statements was 10 (10 items x 1 point = 10 points), and the maximum score (10 items x 5 points = 50 points) was 50. For this reason, the scores varied between 10 and 50 points, and since it is a 5-point Likert type, the difference between the minimum score and the maximum score that can be obtained has been 50-10 = 40 points. The scoring interval (40/5 = 8) is set to 8. An average value between 10-18 in the calculation range is very low; between 19-26 is low, between 27-34 as medium, between 35-42 as high, and between 43-50 as very high.

Another data collection tool used in this study was the "Learning Styles Inventory" developed by Felder and Silverman in 1988 and adapted to Turkish by Fer (2003) and used to secondary school students and high school students in many studies (Danso and Mushayiwka, 2017; Anuar, Abdullah and Hod; 2020). The scale used consists of 44 expressions and includes a and b options. The scale is arranged in four dimensions and each of the four dimensions (Active/Reflective; Sensing/Intuitive;Visual/Verbal; Sequential/Global) is measured with 11 items. Each expression a and b options that make up the scale represent a sub-dimension of a different learning style. For example, a participant who marks the "a" option in all 11 questions that measure the Sensing/Intuitive score will get -11 points in this dimension, and the participant who marks the "b" option in all of them will get +11 points. For example, if the participant's score is negative, it shows that he/she is sensing in that dimension, and his/her positive score is intuitive. In the study conducted by Fer (2003), the Cronbach alpha coefficient of 0.580 was found. In this study, the Cronbach alpha coefficient was found 0.862.

Statistical analysis of the data obtained from Social Sciences and Science High School students were made using the SPSS 20.0 program. The distributions of measurements obtained from Social Sciences and Science High School students do not show normal distribution. Therefore, nonparametric statistics was used (Table.2)

Table 2 Normality test results of the inventories

		Kolmogrov-Smirnov			**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Science High School	Multiple Intelligences inventory	.069	473	.000	.987	473	.000
	Learning Styles Inventory	.196	473	.000	.909	473	.000
Social Sciences High School	Multiple Intelligences inventory	.066	288	.004	.989	288	.028
	Learning Styles Inventory	.186	288	.000	.913	288	.000

Mann Whitney–U test and point-biserial correlation analysis were used for data. Point-biserial correlation coefficient (rb) If one of the variables whose degree of relationship is to be examined, two or more categories of attributes and the other continuous numerical data type, Eta square statistics are used. Eta square statistic is a correlation coefficient related to the change in averages due to the significance test of the difference between the mean (two or more). If the qualitative variable has two categories (such as male-female, successful-unsuccessful), the Eta square statistic is called the point-biserial correlation coefficients (Terzi, 2018).

Results and Discussion

The findings and discussion are sorted by research aims:
Findings and discussions of the first research aim:
Mann-Whitney-U test results on whether Social Science and Science High School students differ by multiple intelligences are shown in Table 3.

Table 3 Mann-Whitney-U test results on Social Science and Science High School students' multiple intelligences

Multiple Intelligence	School Type	N	Score	Level	Mean Rank	Sum Of Ranks	Mann Whitney U	Z	p
Bodily/ Kinesthetic	1	288	34.889	Medium	371.8	107078.5	65462.5	-0.903	0.367
	2	473	35.235	High	386.6	182862.5			
Interpersonal	1	288	32.653	Medium	377.11	108607	66991	-0.382	0.703
	2	473	32.970	Medium	383.37	181334			
Intrapersonal	1	288	34.372	Medium	377.42	108697	67081	-0.351	0.725
	2	473	34.531	Medium	383.18	181244			
Logical/ Mathematical	1	288	34.337	Medium	342.19	98550.5	56934.5	-3.807	0.000*
	2	473	35.814	High	404.63	191390.5			
Musical/ Rhythmic	1	288	36.583	High	396.46	114179.5	63660.5	-1.516	0.130
	2	473	35.886	High	371.59	175761.5			
Verbal/ Linguistic	1	288	33.833	Medium	400.79	115428	62412	-1.942	0.052
	2	473	33.121	Medium	368.95	174513			
Visual/ Spatial	1	288	36.333	High	380.55	109599	67983	-0.044	0.965
	2	473	36.421	High	381.27	180342			
Naturalist	1	288	32.990	Medium	340.23	97985.5	56369.5	-3.999	0.000*
	2	473	34.522	Medium	405.83	191955.5			

* 1: Social Sciences High School 2: Science High School

According to this distribution, students' multiple intelligences vary between 32,653 and 36,583. Considering the average of multiple intelligences of Social Sciences and Science High School students, it is observed that their interpersonal, intrapersonal, verbal/linguistic and naturalist intelligence levels are at a medium level. It is observed that the levels of musical/rhythmic intelligence and visual/spatial intelligence fields are high. In bodily/kinesthetic and logical/mathematical intelligence, it was determined from the findings that Social Sciences High School students were at the middle level and Science High School students were at a high level. According to the Multiple Intelligence Inventory score calculation we used in the study; the lowest intelligence field was determined as the Social Sciences High School students' interpersonal intelligence field with 32,653. At the same time, the highest was the musical/rhythmic intelligence field of the Social Sciences High School students with 36,583.

When Table 3 was examined, it was determined that there was no statistically significant difference between the bodily/kinesthetic, interpersonal, Intrapersonal, musical/rhythmic, verbal/linguistic, and visual/spatial intelligence domain scores of the multiple intelligence domains in terms of school type ($p > 0.05$). The scores of

logical/mathematical intelligence and naturalist intelligence were found to be statistically significant between the multiple intelligence fields of Social Sciences and Science High School students ($p < 0.05$). In comparing social sciences and science high school types according to multiple intelligence domains, it was found that logical/mathematical intelligence and naturalist intelligence scores were more dominant in Science High School students.

When the results of the Mann-Whitney-U Test on whether Social Sciences and Science High School students differ according to their multiple intelligence fields and school type, it was determined that the average scores of the multiple intelligence fields were generally at a moderate level, and the musical and visual/spatial intelligence fields from the multiple intelligence fields were highly developed regardless to school type. In mathematical and bodily/kinesthetic intelligence fields, it has been determined that it is at a medium level in Social Sciences High School students and a high level in Science High School students.

Considering the statistical results regarding whether the levels of intelligence domains of Social Sciences and Science High School students differ according to the type of school when the bodily/kinesthetic, interpersonal, intrapersonal, musical/rhythmic, verbal/linguistic, visual/spatial intelligence domain scores among the intelligence domains were compared in terms of school type, there was no statistically significant difference between them. ($p > 0.05$), when comparing the scores of mathematical and naturalist intelligence in terms of school types, it was determined that the mathematical and naturalist intelligence scores of the Science High School students were higher than the Social Sciences High School students. In line with these results, the fact that the field courses of the Science High School students in the educational institution where they study are also oriented to the fields of science and mathematics in the academic sense has caused the mathematical intelligence fields and naturalist intelligence to develop more than the Social Sciences High School students.

In studies which multiple intelligence areas of students in different high school types were determined, it was concluded that the mathematical intelligence areas of Science High School students were higher than those of other high school types (Korkmaz & Yeşil, 2011). When looking at the studies in which multiple intelligence levels were determined without making any comparison between high schools, it was seen that the dominant intelligence levels were mathematical and musical/rhythmic intelligence (Güllü & Tekin, 2009). The findings obtained at the end of these studies are similar to the result of our study that the students studying at Social Sciences and Science High Schools, which are two different high school types, have a high level of musical/rhythmic intelligence in both high school types, and the field of mathematical intelligence is at a high level in Science High School. In another study, the field of musical/rhythmic intelligence differs from our research results as it is the least preferred field of intelligence among both groups included in the study (Koura & Al-Hebaishi, 2014).

Findings and discussions of the second research aim:

The frequency rates of the Social Sciences and Science High School students' learning styles are shown in Table 4. Considering the Social Sciences High School students' average learning styles in Table 4, the Social Sciences High School students' average learning style is 62% reflective learning style, 61% sensing learning style, 79% visual learning style and 62% global learning style. Considering the average learning styles of Science High School students, 63% reflective learning style, 55% sensing learning style, visual/verbal learning styles 75% visual learning style, 57% global learning style. When the findings obtained from Table 4 were examined, it was determined that the students highest with the visual learning style of 79% and the lowest with the verbal learning style of 21% were students studying at the Social Sciences High School.

Table 4 Mann-Whitney-U test results on Social Science and Science High School students' learning style

Learning Styles	School Type	N	f	Mean Rank	Sum of Ranks	Mann Whitney U	Z	p
Active/ Reflective	1	111	%38	367.38	105806	64190	-1.347	0.178
		177	%62					
	2	176	%37	389.29	184135			

Sensing/ Intuitive	1	297	%63	403.15	116106	61734	-2.185	0.029*
		176	%61					
		112	%39					
	2	260	%55	367.52	173835			
		213	%45					
Visual/ Verbal	1	228	%79	395.30	113846	63993.5	-1.411	0.158
		60	%21					
	2	244	%75	372.29	176094.5			
		118	%25					
Sequential/ Global	1	110	%38	383.87	110554	67286	-,284	0.776
		178	%62					
	2	202	%43	379.25	179387			
		271	%57					

* 1: Social Sciences High School. 2: Science High School

When Table 4 is examined, according to the results of the Mann-Whitney-U test conducted to determine whether the learning style averages of the Social Sciences High School and Science High School students participating in the study create a statistically significant difference according to the school type variable, there was no statistically significant difference between the averages of students with active/reflective, visual/verbal, and sequential/global learning styles ($p > 0.05$). It was found that there is a statistically significant difference between the types of schools in which the Social Sciences High School and Science High School students attended the study in sensing/intuitive learning style, which is one of the sub-dimensions of their learning styles. ($p < 0.05$). According to the difference between the averages, it was determined that the sensing/intuitive learning style in the Social Sciences High School was more dominant than the Science High School students.

Considering the distribution of learning styles of Social Sciences and Science High School students according to the difference between schools, no statistically significant difference was found between the averages of the students with active/reflective, visual/verbal, and sequential/global learning style dimensions of Social Sciences and Science High School students' learning styles ($p > 0,05$). It was found that the average of the sensing/intuitive learning style dimension of the Social Sciences and Science High School students was a statistically significant difference according to the difference between schools ($p < 0.05$). Considering the difference between the average learning style among high schools, it was concluded that sensing learning style is dominant in both Social Sciences and Science High Schools, but intuitive learning style is more dominant in Science High School than Social Sciences High School.

Individuals with sensing learning style, one of the sensing/intuitive learning style dimensions, practice memorizing, and processing information in detail. Individuals with an intuitive learning style are good at using mathematical formulas but do not like memorization and ordinary calculations (Yeşilyurt, 2019). Therefore, according to the data we obtained as a result of the research, the predominance of the sensing learning style in both high schools and the predominance of the intuitive learning style among the Science High School students compared to the Social Sciences High School students, the content of the courses taken by the students in the type of school they attended and the individual differences of the students of these school types entered by exam It is supported by the use of preferences.

When the studies related to our study in the literature are examined, the result of our research is parallel to the conclusion that the majority of the students in the science department have a sensing learning style, which was revealed in the studies of Şeker Sır, Karataş & Çeliköz (2015), which was examined the relationship between

the departments that student's study and their learning styles. Keskin Samancı & Özer Keskin's (2007) study shows that most of the social studies department students have an intuitive learning style differs from our study's result.

Findings and discussions of the third research aim:

The relation between Learning Styles and Multiple Intelligence areas of Social Sciences and Science High School students is shown in Table 5.

Table 5 Correlation Values Between Social Sciences and Science High School Students' Learning Styles and Scores of Multiple Intelligence Areas

Multiple Intelligence	School Type	Learning Styles			
		Active/ Reflective	Sensing/ Intuitive	Visual/ Verbal	Sequential/ Global
Bodily/Kinesthetic	1	0.172**	0.227**	0.006	0.026
	2	0.093*	0.025	0.036	0.061
Interpersonal	1	0.243**	0.171**	0.001	0.050
	2	0.189**	0.064	0.015	0.000
Intrapersonal	1	0.006	0.154**	0.054	0.023
	2	0.053	0.044	0.066	0.015
Verbal/Linguistic	1	0.083	0.140**	0.167**	0.002
	2	0.050	0.136**	0.068	0.004
Logical/Mathematical	1	0.045	0.181**	0.048	0.111
	2	0.017	0.059	0.002	0.038
Musical/Rhythmic	1	0.170**	0.040	0.093	0.052
	2	0.021	0.023	0.001	0.078
Naturalist	1	0.132*	0.110	0.137*	0.046
	2	0.059	0.064	0.004	0.018
Visual/Spatial	1	0.059	0.148*	0.182**	0.057
	2	0.051	0.100*	0.105*	0.016

* 1: Social Sciences High School. 2: Science High School

* $p < 0.05$, ** $p < 0.01$

As can be seen in Table 5, although it is not very strong, it has been determined that there are positive correlations between students' learning styles and multiple intelligences. Science High School students; between active/reflective learning style and bodily/kinesthetic and interpersonal intelligence; between sensing/intuitive learning style and verbal/linguistic, logical/mathematical and visual/spatial intelligence; Significant positive relationships were found between visual/verbal learning style and visual/spatial intelligence. However, a positive relationship but not significant was found between sequential/global learning style and intelligence types. These findings support results of similar studies in the literature. Can (2007), research on high school students, mathematical intelligence was found between the verbal/linguistic intelligence domain and the auditory learning style, the bodily/kinesthetic intelligence domain and the bodily/kinesthetic learning style, the intrinsic intelligence domain and the visual learning style, the musical/rhythmic intelligence domain, and the auditory learning style. It has been observed that there is a significant and significant relationship between the field of learning and bodily/kinesthetic learning style, between the visual/spatial intelligence domain and the visual learning style, the interpersonal intelligence domain, and the bodily/kinesthetic and auditory learning styles. Baleghizadeh and Shayeghi (2014) in their study on students of various ages; linguistic intelligence and tactile as well as auditory learning style preferences; mathematical intelligence and individual learning style; bodily/kinesthetic intelligence as well as kinesthetic group learning styles; In addition to intrapersonal intelligence and individual learning style and interpersonal intelligence and group learning style preferences, there are positive relationships between mathematical intelligence and group learning, and they could not find a significant relationship between visual and musical/rhythmic intelligence and all learning style preferences. Tekiner (2005), in his studies, Turkish university students' interpersonal intelligence and group learning style; linguistic intelligence and individual learning style; mathematical intelligence and individual learning style; emotional intelligence and individual learning style; They found positive relationships between interpersonal intelligence and kinesthetic learning styles.

In Social Sciences High School students, between active/reflective learning style and bodily/kinesthetic intelligence, interpersonal intelligence, musical/rhythmic intelligence, and naturalist intelligence; sensing/intuitive learning style province between bodily/kinesthetic intelligence, interpersonal intelligence, intrapersonal intelligence, verbal/linguistic intelligence, logical/mathematical intelligence, and visual/spatial intelligence; Significant positive relationships were found between visual/verbal learning style and verbal/linguistic intelligence, naturalist intelligence, and visual/spatial intelligence. However, a positive but not significant relationship was found between sequential/global learning style and intelligence types. This finding was congruent with the previous studies. Demir (2010), in his research on ninth-grade students, revealed a positive linear relationship between the visual/visual, Auditory / Verbal-Musical, and Bodily / Bodily pairs at medium and low levels. Other domains of multiple intelligences can explain learning styles at a much lower rate. So, there is no high-level explanation that completely overlaps. Aygül and Koç (2016) observed a low-level positive relationship between learning styles and multiple intelligence scores. According to the research findings, the highest correlation was found between visual/spatial intelligence scale scores and sensing/intuitive learning style (r = 0.292). The lowest correlation was found between intrapersonal intelligence scale scores and visual/verbal learning style (r = 0.196). Seifoori and Zarei (2011), tactile learning style and mathematical intelligence in Iranian university students in their study; kinesthetic learning style and mathematical intelligence; tactile learning style and spatial intelligence; Significant positive relationships have emerged between tactile learning style and bodily/kinesthetic intelligence and kinesthetic learning style and bodily/kinesthetic intelligence.

When the relationship between Social Sciences and Science High School students' learning styles and their scores on multiple intelligence domains was examined, there were significant but positive relationships in all three learning style dimensions. According to the results, it was determined that although there was a positive relationship between the sequential/global learning style dimension of the Science and Social Sciences High School students and any of the intelligence domains, there was no significant relationship. The similarity between all intelligence domains and all learning styles reveals that although individuals' strong intelligence areas are different, their preferred learning styles are similar. These findings support Gardner's (1993) thoughts. According to Gardner, the theory of multiple intelligences and learning styles are similar. However, Gardner states that these similarities are between pairs that resemble each other and that there is a low level of similarity. Considering the studies in the literature in which Multiple Intelligences Theory and learning styles were investigated together, similar results were obtained with our research results. In studies examining the relationship between high school students' multiple intelligences and learning styles, there is a positive relationship between learning style and multiple intelligence domains (Baleghizadeh & Shayeghi, 2014; Snyder, 1999; Alrabah, Wu & Alotaibi, 2018). In studies examining the relationship between intelligence types and learning styles of university students, it was found that there are significant differences between the intelligence domain and learning style (Tekiner, 2005; Seifoori & Zarei, 2011; Panahandeh, Khoshkhoonejad, Mansourzadeh, & Heidari, 2015; Aygül & Koç, 2016; Şener and Çokçalıkan 2018).

This research and the results of similar studies in the literature show that multiple intelligences significantly affect students' learning styles and students tend to prefer learning styles that are compatible with their intelligence preferences. Teachers can use these findings to identify students 'learning styles compatible with appropriate intelligence types and apply appropriate tools to improve academic teaching and ensure optimum learning according to students' needs. It can also serve as an important auxiliary tool to introduce students' types of intelligence and learning styles in the education system, motivating them to realize their potential in achieving their desired learning goals. Therefore, it is necessary for the teachers to know their students' intelligence types and preferred learning styles for pedagogical applications.

Conclusion

As a result, this study is one of the rare studies involving 9th, 10th, 11th, and 12th grade students studying at the Science High School and Social Sciences High School preferred by the students who are successful in the transition to secondary education and comparing the Social Sciences and Science High Schools in terms of school type. As a result of our study, it was determined that students' intelligence areas and learning styles in different school types show statistically significant differences. In line with these data, it is thought that students' awareness of their differences and their education in schools enriched in terms of program and course functioning will bring individual success along with the dimensions of learning style and intelligence areas where individual differences are most evident.

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