

# Assessing Scientific Epistemological Beliefs of Middle School Gifted Students

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This study, which examines the epistemological belief levels of gifted students in the context of demographic characteristics such as gender, age, grade level, pre-kindergarten education, and parents' educational status, is a causal comparison research. The study sample of the research consists of 203 students who are enrolled in the Science and Art Center in the central district of Kütahya province during the 2021–2022 academic year in Turkey. Survey model, one of the quantitative research methods, was used in the research. Two data collection tools were used in the study. According to the findings, there was no statistically significant difference between the students' epistemological belief levels depending on their gender ( $p=0.464$ ) and kindergarten education ( $p=0.069$ ). However, statistically significant differences were determined in terms of age, gender and parent education variables. The data obtained shows that students whose fathers are university graduates have a higher average score on the epistemological belief scale. A significant relationship was found between father's education level and the epistemological belief levels of gifted students. It is of critical importance that gifted students have many contemporary skills, including a contemporary epistemological belief, considering the place of these individuals in society.

**Keywords:** gifted/talented students, giftedness, education, epistemological beliefs.

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# Оценка эпистемологических убеждений одаренных учеников средней школы

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В статье представлены результаты исследования, в котором изучен уровень выраженности эпистемологических убеждений одаренных детей в зависимости от демографических характеристик, таких как пол, возраст, класс, дошкольное образование и образовательный статус родителей. **Выборку** исследования составили 203 ученика Центра науки и искусства (провинция Кютахья, Турция). Исследование проводилось в течение 2021–2022 учебного года. **Результаты.** Не было выявлено различий в уровне эпистемологических убеждений учащихся в зависимости от их пола ( $p=0,464$ ) и опыта дошкольного обучения в детском саду ( $p=0,069$ ). Однако были выявлены статистически значимые различия, связанные с возрастом учеников, полом и образованием их родителей. Полученные данные показали, что учащиеся, чьи отцы являются выпускниками университетов, имеют более высокий средний балл по шкале эпистемологических убеждений. Была обнаружена значимая связь между уровнем образования отца и уровнем эпистемологических убеждений одаренных студентов. Развитие у одаренных учеников компетенций, отвечающих современным требованиям, включая современные эпистемологические убеждения, является важной социальной задачей.

**Ключевые слова:** талантливые/одаренные ученики, одаренность, образование, эпистемологические убеждения.

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## Introduction

The affective, cognitive, social and developmental characteristics that individuals have are different from each other [55]. It is critical to take these differences into account in education and to provide educational services tailored to the needs of the individual [25]. As with every individual, gifted individuals who have a great potential to produce products and present ideas and inventions that are of critical importance for the future of the world have their own affective, cognitive, social and developmental characteristics [42; 56]. For this reason, the education of special talents, who are in such a critical position for society, is of great importance [26]. The educational services to be provided for them must be designed to positively serve their individual differences and potential talent areas [16; 50]. Developing various education methods for gifted people in a country can enable gifted individuals to be in a more advanced and developed position compared to other countries in terms of bringing them to a point useful to society and science. These educational services should be in a scope that will enable gifted individuals to acquire twenty-first century skills and improve their skills [6].

Scientific epistemological belief; It can be defined as a belief that an individual has regarding the acquisition of knowledge, and it refers to the way the individual handles information and the approach he/she applies when reaching it [36]. The emergence of these beliefs occurs when individuals reflect their subjective perspectives. Since each individual's way of handling information and the approach they apply may be different, it can be said that scientific epistemological beliefs are a subjective evaluation process. In other words, scientific epistemological beliefs may vary depending on the person [13].

In the literature, epistemological beliefs; There are studies showing that it is related to concepts such as learning, education, course success and motivation [18; 20; 36]. Scientific epistemological beliefs, which affect students' many approaches to the course, are affected by many variables such as age, gender, grade level, education level and culture [38].

## Giftedness

The definition of giftedness shows some differences in different societies and cultures. While researchers associated the concept of giftedness with a higher IQ score, especially in the period between 1920 and 1980, with the beginning of the transition to the modern education approach, they stopped making one-way intelligence assessments and started to make more comprehensive talent definitions [23].

Terman [44], who conducted some of the first studies for the specially gifted and aimed to diagnose individuals with special abilities using the Stanford-Binet Intelligence Test, defined individuals whose performance in tests was within 1% of the peak intelligence score of the population as gifted. While describing gifted individuals in Hollingworth, who conducted research with a similar criterion value; mentioned that they are in the top 1% of the general population. He also stated that these individuals express themselves easily, learn quickly, and have high creativity and motivation values [21].

In the Marland Report published in the United States, it was mentioned that individuals with special talents have high-level talent capacity in one or more specific performance areas. In the report, it was mentioned that these ability areas are; general mental ability, special

academic ability, creative-productive ability, leadership ability, ability in the field of music and visual arts or ability in the psychomotor field. Individuals with special talents are individuals who have an exceptional talent potential in at least one of these areas [27].

One of the most common theories in the literature in terms of describing gifted individuals is the “Three Ring Theory” put forward by Renzulli [32]. In this theory, Renzulli defines giftedness as the combination of special/general ability, creativity and motivation [32].

Tannenbaum [43] defined special talent with the Star Model that he introduced. He considered each arm of the star, which consists of 5 separate ends, as a factor. These factors; general ability, special ability, intellectual (non-mental) factors, environmental factors and luck factor. According to him, the extraordinary talent potential that exists in the individual can become a real special talent only when these five factors come together with a positive commitment [43].

Sternberg and Zhang [40] proposed that in order to classify an individual as gifted, they must meet all five criteria. These five criteria are as follows:

*Rarity:* The individual's ability is considered rare compared to their peers.

*Excellence:* The individual outperforms their same-aged peers in one or more domains of performance.

*Productivity:* The domain in which the individual is considered gifted allows for creative and productive output.

*Proof:* There is evidence to support the individual's giftedness.

*Valuation:* The individual's giftedness is recognized and valued by the surrounding society.

These criteria collectively define the concept of giftedness and provide a framework for identifying and understanding gifted individuals.

According to the Science and Art Centers Directive published by the Ministry of National Education [5], the definition of a gifted individual is; It was made as “individual who performs at a higher level than their peers in intelligence, art, creativity, motivation, and special academic fields”.

## **Characteristics of Gifted Individuals**

Gifted individuals generally notice the differences and changes in their environment better because they have a high level of sensitivity. This awareness can lead to high success and creativity, especially in artistic and intellectual activities [1]. Additionally, gifted individuals are willing to take responsibility for others and demonstrate leadership potential [51]. In addition, thanks to their perfectionist nature, they show superior determination to complete the tasks they start without getting bored. Gifted individuals have also developed the necessary skills to act in harmony with their environment. By improving themselves in difficult conditions, they cope better with stressful situations and can intuitively notice the dynamics around them. These features position gifted individuals as potential leaders and pioneers to be successful in different areas of life [34; 60].

## Education of Gifted Individuals

Gifted individuals may have different high performance potentials in different areas. For this reason, when providing education to gifted individuals, care should be taken to include content that is more diversified and will benefit the student's ability to improve rather than uniform educational approaches [34; 54].

Rather than providing benefits to gifted individuals, classical education environments may prevent them from reaching their potential. For this reason, it is necessary to turn to differentiated educational contents to enable gifted individuals to reach their potential. It is a critical necessity to properly meet the educational needs of gifted students in order to prevent them from getting bored during education, losing interest and not being able to reach their potential [8]. In order to meet these needs, activities that will increase their motivation and lead them to think creatively and challengingly can be resorted to. The training to be given to them should be broader and more comprehensive than standard training procedures [33].

Researchers have different views on whether specially gifted individuals should receive education in homogeneous groups with their normally talented peers or separately from them. Some researchers think that providing separate education to gifted individuals may lead to the formation of a different and elite class in society [28]. Some researchers, on the other hand, argue that in line with the principle of equal opportunity in education, gifted individuals should be given the privilege they deserve in order to reach their potential. They claim that the potential talent that exists in gifted individuals can only be transformed into a real and beneficial talent in this way. Therefore, they suggested that gifted individuals should be divided into homogeneous groups and they should receive a richer and more comprehensive education that is different from the classical education approach [7].

Although there are different perspectives on this subject, the generally accepted view today is that gifted individuals should receive education in an environment, content and programs that are different from the classical education approach and that will allow them to reach their potential talents. In line with this structure of thought, the widely accepted educational strategies for the education of individuals with special abilities are expressed in the form of grouping, acceleration, enrichment [3; 11; 46; 47].

*Grouping:* It is a modeling that enables individuals with special abilities in similar fields to work together. There are three different grouping methods: full-day homogeneous grouping, full-day heterogeneous grouping, half-day/temporary grouping [11; 23].

*Acceleration:* The readiness of gifted individuals in emotional, cognitive, social and academic fields is taken into consideration and an acceleration program is applied to the student in the format deemed necessary. The content of this model includes programs such as starting school early, skipping classes, skipping classes specifically for advanced courses, narrowing the curriculum. Thanks to the acceleration application, the gifted individual can receive a continuous and effective education without losing his interest and motivation in the lessons [34].

*Enrichment:* It is a model in which a gifted individual is educated in the same environment as his normally talented peers. It is based on diversifying the school curriculum in a way that allows students to develop their special talents. In this way, the individual has the opportunity to have in-depth and advanced knowledge about a subject. In addition, due to the fact that normally talented individuals are in the same classroom environment, these

students have the opportunity to gain contemporary thinking skills such as critical thinking, creative thinking and problem solving together with gifted individuals [17].

Researchers have revealed that these strategies have many benefits as well as some disadvantages. Particularly, some applications in the grouping model can cause negative gains such as making comparisons, jealousy, and different thinking among students. In addition, if the enrichment application is not applied correctly and consists of activities aimed at improving a single skill area by repeating each other, contrary to expectations, it can further reduce the motivation of the student [12].

In Türkiye, some studies have been carried out for gifted individuals in the last century. Especially in the first 50 years of the republic, individuals who were determined to be gifted were sent abroad to receive education. In the following years, Science High Schools, Anatolian High Schools, Fine Arts High Schools were opened and special talented individuals were tried to be determined. In 2002, the Department of Education for the Gifted was opened, and in 2007 Education Programs for Talented Students (EPTS) was established with the support of TUBITAK and Anadolu University. In 2017, the Research, Development Education and Application Center Secondary School and High School, which is the first official separate school opened for the education of gifted students, was opened [2; 11; 52].

The most widely used educational institutions for the education of gifted individuals in our country are Science and Art Centers (SAC). Science and Art Centers can be defined as institutions that offer different and enriched learning environments/activities that will enable individuals who have been determined to be gifted in different fields (visual arts, music, mental intelligence fields), in addition to their original education, to develop their talents and reach their potential [5]

## **Epistemological Beliefs**

Epistemological beliefs seek answers to the questions of what knowledge is, how it is acquired, what the degree of certainty is, and what limits and criteria there are for knowledge [19]. Schommer [37] states that epistemological beliefs do not develop simultaneously in the individual. He says that it consists of 5 sub-dimensions: “source of information”, “certainty of information”, “structure of information”, “control of learning” and “speed of learning”. In other words, while some individuals may show high development in one sub-dimension, they may show low development in another sub-dimension [36; 37]. However, the last two sub-dimensions, “control of learning” and “speed of learning”, are less accepted than the other three sub-dimensions and receive objections that they are about learning, not epistemology [19].

Epistemological beliefs are expressed as beliefs about the source, acquisition, structure and accuracy of knowledge. In other words, they can be generally referred to as beliefs about the nature of knowledge [15]. Hofer and Pintrich [19] examined epistemological beliefs in two general dimensions as “the nature of knowledge” and “the nature of knowing”. Conley et al. [9] divided the nature of knowing into two sub-dimensions: “source of knowledge” and “justification”, and the nature of knowledge into two sub-dimensions: “constancy of knowledge” and “development of knowledge”. Source of information sub-dimension; It is about what the source of the information is and whether it depends on any argument or not. Justification sub-dimension; It involves the individual's way of evaluating information with evidence and claims. The immutability of information sub-dimension deals with the issue of the existence of a single

answer believed to be correct and the possibility of multiple answers. Finally, the development of knowledge sub-dimension is related to the fact that scientific thoughts and theories can fundamentally change and develop with new and solid data.

According to Perry [30], epistemological beliefs are the individual's questions about the nature of knowledge, such as how knowledge is obtained, what it is, its certainty, and what its measurements are. Epistemology basically starts from the question "what is knowledge?" It examines the concrete handling of information in the mind, how it emerges, distinguishing the difference between right and wrong, its limits and effectiveness. In other words, it deals with the relationship between the person with knowledge and the known situation in detail [22]. It is how a person perceives any situation, event, object or person he may encounter in his life, the thoughts he constructs in his mind, and which the person accepts as undoubtedly true or suggests to be accepted. In other words, it can be said that this belief is at the center of all decisions people make throughout their lives [19].

Epistemological beliefs include how individuals view knowledge, the construction of knowledge, and all value judgments in this process. Epistemological beliefs can be shaped according to individual differences. From a subjective perspective, it seeks answers to questions such as how knowledge is obtained, how the activity of knowing takes place, and what knowledge is. Preparing environments that will allow the student to think like a scientist through activities such as observation, prediction, hypothesizing, experimenting, obtaining data, data analysis, and designing experiments can enable the development of epistemological thinking in the student. Making students understand the nature of science, especially through science lessons, can help them develop positive attitudes towards science [14; 39]. Especially in science classes that adopt a student-centered contemporary education approach, students can develop scientific epistemological beliefs through mental, social and experimental activities. In this direction, the aim of this research is to evaluate the scientific epistemological beliefs of gifted students studying at the Science and Art Centers within the framework of various demographic information of the students.

## Method

Survey model, one of the quantitative research methods, was used in the research. Survey models aim to describe a past and present situation as it is [10]. In survey models, the event, individual or object that is the subject of the research is tried to be defined directly and as it is, without any effort to change or influence it [48]. This study aims to determine the level of scientific epistemological beliefs among gifted students and investigate whether there is a relationship between their levels of scientific epistemological beliefs and their gender, age, grade level, pre-kindergarten education and parents' educational backgrounds.

## Working Group

The study sample of the research consists of 203 students who are enrolled in the Science and Art Center in the central district of Kütahya province during the 2021–2022 academic year in Turkey. The demographic characteristics of the study sample are presented in Table 1.

As seen in Table 1, out of the 203 gifted students participating in the research, 111 are male and 92 are female. The highest participation is observed at the age of 13 (76 students) and

in the 8th grade (82 students). Of the students participating in the research, 105 of them received education before kindergarten, 98 of them did not receive education before kindergarten. When examining the educational backgrounds of the students' parents, it is observed that the highest educational level for mothers is high school (81), and for fathers, it is also high school (87).

Table 1

**Demographic Characteristics of Gifted Students Constituting the Sample**

Demographic Characteristics		<i>f</i>	%
<b>Gender</b>	Male	111	54.7
	Female	92	45.3
<b>Age</b>	10	17	8.4
	11	52	25.6
	12	39	19.2
	13	76	37.4
	14	19	9.4
<b>Grade Level</b>	5	37	18.2
	6	65	32.0
	7	19	9.4
	8	82	40.4
<b>Pre-Kindergarten Education Attendance</b>	Yes	105	51.7
	No	98	48.3
<b>Mother's Education Level</b>	Elementary School Graduate	29	14.3
	Middle School Graduate	37	18.2
	High School Graduate	81	39.9
	University Graduate	48	23.6
	Master's and Above Graduate	8	3.9
<b>Father's Education Level</b>	Elementary School Graduate	15	7.4
	Middle School Graduate	24	11.8
	High School Graduate	87	42.9
	University Graduate	59	29.1
	Master's and Above Graduate	18	8.9



## Data Collection Instruments

Scientific Epistemological Beliefs Scale (SEBS) and Demographic Information Form were used in the study conducted with the causal comparison model. In accordance with the causal comparison model, the SEBS were applied once to gifted students studying at the Science and Art Center. In determining the data collection tool to be used in the study, in addition to considering their suitability for gifted students, attention was also paid to whether the scales contained items that might not be ethically appropriate for students. After the necessary evaluations, the data collection tool planned to be used in the study were determined and the necessary permissions for their use in this study were obtained from the scientists who developed them. The SEBS and Demographic Information Form used in the study are:

### *Scientific Epistemological Beliefs Scale*

This scale, prepared by Pomeroy [31] and adapted into Turkish by Deryakulu and Bıkmaz [13], aims to measure the scientific epistemological belief levels of candidates. The 5-step Likert type scale shows a single-factor structure and consists of 30 items. While 22 of the 30 items in the scale express the traditional understanding of science and are coded as positive, 8 of them express the non-traditional understanding of science and are coded as negative. High scores from the scale indicate a predisposition to the traditional understanding of science.

Cronbach Alpha reliability analysis was performed to determine the reliability of the data collected using the Scientific Epistemological Beliefs Scale and the Cronbach  $\alpha$  internal consistency coefficient for the data collected from the entire scale was found to be =0.888.

### *Demographic Information Form*

It was developed by the researchers in order to obtain various personal information from gifted students. It contains 6 different items: gender, age, grade, education before kindergarten, mother's education level, father's education level.

## Analysis of Data

In the research, the data obtained from the answers given by gifted students to the Scientific Epistemological Beliefs Scale and Demographic Information Form were transferred to the computer environment and analyzed using the SPSS 21.0 software package for statistical evaluation. Table 2 presents the descriptive statistics of the study group regarding the Scientific Epistemological Beliefs Scale.

Table 2

**Descriptive Statistics of Scores Obtained by Gifted Students  
on the Scientific Epistemological Beliefs Scale**

Scale	N	Min	Max	X	SD
Epistemological Belief	203	1.70	5.00	3.60	.474

When the data in Table 2 is examined, it is seen that the average score that gifted individuals receive from the Scientific Epistemological Beliefs Scale is 3.60.

It was examined whether the answers given by the students to the Scientific Epistemological Beliefs Scale showed normal distribution and the obtained data are shown in Table 3.

Table 3

### Normality Test of the Distribution

Scale	N	Skewness		Kurtosis	
		Statistic	Std.	Statistic	Std.
Epistemological Belief	203	-.345	.171	1.429	.340

In the normality test presented in Table 3, it can be observed that the distribution is normal. In examining the normality of data obtained in a research, one can look at the skewness and kurtosis values. Skewness and kurtosis coefficients between “-1.5 to +1.5” indicate that the obtained data follows a normal distribution [41].

Independent groups t-test was applied to examine the effect of gender of gifted students on their epistemological belief levels. Likewise, independent groups t-test was applied to examine the effect of receiving education before kindergarten on epistemological belief levels.

One-way ANOVA test was applied to examine the effects of students’ ages, grades, mother and father’s educational status on students’ epistemological belief levels. The Bonferroni test, a multiple comparison test, was used to determine which group(s) caused the differences in epistemological belief levels among the students in terms of age, grade, mother’s education level and father’s education level. To interpret the statistical significance of the data, a significance level of  $p < 0.05$  was accepted [57; 58].

## Results

In this part of the research, a comprehensive analysis is presented about the epistemological belief levels of gifted students. For this purpose, the data obtained was carefully examined, tabulated and reported in a way to provide solutions to the research problem.

### The Effect of Gender on Epistemological Belief Levels of Gifteds

Table 4 presents the findings related to the application of an independent samples t-test to examine the impact of gender on the epistemological belief levels of gifted students.

According to the findings in Table 4, there was no statistically significant difference between the students’ epistemological belief levels ( $p = 0.464$ ) depending on their gender.

Table 4

**Epistemological belief levels of gifted students according to the gender**

Scale	Gender	N	X	SD	t-test		
					t	df	p
Epistemological Belief	Female	92	3.63	0.46	0.734	201	0.464
	Male	111	3.58	0.48			

**The Effect of Prekindergarten Education on Epistemological Belief Levels of Gifteds**

To investigate the impact of students' pre-kindergarten education on their epistemological belief levels, an independent samples t-test was conducted, and the findings of this test are presented in Table 5.

Table 5

**Epistemological belief levels of gifted students according to the pre-kindergarten education status**

Scale	Pre-Kindergarten Education Attendance	N	X	SD	t-test		
					t	df	p
Critical Thinking	Yes	105	3.62	0.67	0.586	201	0.558
	No	98	3.54	0.49			

According to the findings in Table 5, there was no statistically significant difference between the students' epistemological belief levels ( $p=0.558$ ) depending on whether they received education before kindergarten or not.

**The Impact of Age, Grade, Parental Education on Epistemological Belief Levels of Gifteds**

A one-way ANOVA test was conducted to examine the impact of age, grade level, and parents' education levels on the epistemological belief levels of gifted students. Table 6 presents the results of the ANOVA test, which investigates the effect of the age variable on students' epistemological belief levels.

When the one-way ANOVA test results of the scores obtained by the gifted students from the epistemological belief scale according to the age factor are examined ( $F=3.104$ ;  $p<0.05$ ), it is seen that there is a significant difference.

Bonferroni test was applied to determine which age groups the scores students received from the epistemological belief scale differed. The results show that there are significant differences between 10 year olds and 14 year olds in favor of the 10 year olds and between 11 year olds and 14 year olds in favor of the 11 year olds.

Table 6

**Epistemological belief levels of gifted students according to the age**

Scale	Age	N	X	SD	Source of variat.	Sum Squares	dF	Mean Squ.	F	p	Signifi- cance
Epistemological Belief	10	17	3.81	.363	Bet.Gr.	2.687	4	.672	3.104	.017*	10-14; 11-14
	11	52	3.69	.467	Wit.Gr.	42.856	198	.216			
	12	39	3.54	.425	Total	45.543	202				
	13	76	3.58	.489							
	14	19	3.33	.514							
	Total	203	3.60	.474							

Note: \* —  $p < 0.05$ .

The results of the ANOVA test examining the effect of grade level on students' epistemological belief levels are presented in Table 7.

Table 7

**Epistemological belief levels of gifted students according to the grade**

Scale	Grade	N	X	SD	Source of variat.	Sum Squares	dF	Mean Squ.	F	p	Signifi- cance
Epistemological Belief	5	37	3.78	.433	Bet. Gr.	5.271	3	1.757	8.681	.000*	5-8; 7-6,8
	6	65	3.59	.444	Wit.Gr.	40.272	199	.202			
	7	19	3.94	.354	Total	45.543	202				
	8	82	3.45	.479							
	Total	203	3.60	.474							

Note: \* —  $p < 0.05$ .

Considering the one-way ANOVA test results of the scores of the gifted students from the epistemological belief scale according to the grade level factor ( $F=8.681$ ;  $p < 0.05$ ), significant differences were observed. As a result of the Bonferroni test, which was conducted to understand in which segments the differences between groups occurred in the epistemological belief scale, significant differences were found between 5th and 8th grades in favor of 5th graders, and between 7th grades and 6th and 8th grades in favor of 7th grades. These results reveal that the epistemological belief levels of gifted students are related to their grade levels. In particular, it is understood that 5th grade and 7th grade students have higher epistemological belief levels than other grade levels.

Table 8 gives the results of the ANOVA test examining the effect of mother's education level (M.E.L) on the epistemological belief levels of gifted students.

Table 8

**Epistemological belief levels of gifted students according to the mother’s education level**

Scale	M.E.L	N	X	SD	Source of variat.	Sum Squares	dF	Mean Squ.	F	p	Signifi-cance
Epistemological Belief	Primary-1	29	3.51	.599	Bet.Gr.	1.969	4	.492	2.237	.066	-
	Middle-2	37	3.47	.628	Wit.Gr.	43.473	198	.220			
	High-3	81	3.61	.613	Total	45.543	202				
	Uni.-4	48	3.70	.784							
	Master’s and above-5	8	3.89	.446							
	Total	203	3.60	.683							

When the one-way ANOVA test results of the scores received by the gifted students from the epistemological belief scale according to the mother’s education level factor were examined (F=2.237; p>0.05), no significant difference was found.

Table 9 provides the results of the one-way ANOVA test examining the effect of fathers’ educational levels (F.E.L) on the epistemological belief levels of gifted students.

Table 9

**Epistemological belief levels of gifted students according to the fathers’ educational level**

Scale	F.E.L	N	X	SD	Source of variat.	Sum Squares	dF	Mean Squ.	F	P	Signifi-cance
Epistemological Belief	Primary-1	15	3.46	.665	Bet. Gr.	3.534	4	1.500	4.164	.003*	4-1
	Middle-2	24	3.51	.391	Wit. Gr.	42.009	198	.447			
	High-3	87	3.52	.453	Total	45.543	202				
	Uni.-4	59	3.80	.373							
	Master’s and above-5	18	3.58	.619							
	Total	203	3.60	.474							

Note: \* — p<0.05.

According to the one-way ANOVA test results, it was found that there was a significant difference between father's education level and epistemological belief. According to the Bonferroni analysis results, it was determined that there was a significant difference between the epistemological beliefs of students whose father’s education level was university graduate and the epistemological beliefs of students whose father’s education level was primary school graduate (p<0.05).

## Discussion

In this study, the epistemological belief levels of gifted students were examined according to various demographic characteristics. The results revealed that the epistemological belief scale scores of gifted students were at medium-high level. There are studies in the literature that support these data [35; 38]. The similarity of the students' socioeconomic and cultural situations may be effective in these studies yielding similar results to the current research. In addition, there are studies where the epistemological beliefs of gifted students are found to be high [29; 45; 49]. The reasons why the results of other studies differ from our study can be shown as the higher education levels of the countries where the research was conducted and the fact that the students are in a more positive environment in terms of socioeconomic and cultural aspects.

When the epistemological belief levels of gifted students were examined according to the gender variable, it was determined that the gender factor did not make a significant difference. This result supports some of the previous studies in the relevant field [4; 23; 35; 53]. Although the data did not show a significant difference, it was observed that, in general, the epistemological belief levels of gifted female students were higher than that of gifted male students. There are some results in the literature that support [4; 53] and do not support this data [23]. When the studies in which similar results were obtained are examined, it is seen that they were studied on students living in a similar region to the region in which the research was conducted.

Although the data obtained in the study showed that the epistemological belief levels of students who received education before kindergarten were higher than those of students who did not receive education before kindergarten, the results obtained did not create a significant difference. The data obtained shows that students in the 10-year-old group have a higher average score on the epistemological belief scale. In addition, it was revealed that the age variable created a significant difference in the level of epistemological belief. It is possible to say that, in general, the 10 and 11 age groups differ significantly more than other age groups in the epistemological belief scale. It is seen that the 14 age group has the lowest average score. From this, it can be concluded that as the age of gifted students increases, there is a decrease in their epistemological belief levels. There are some studies in the relevant literature [4; 53] showing that as the ages of gifted students increase, their epistemological belief levels also increase. The reason for these differences may be that students have different socioeconomic and sociocultural structures and are educated with different education systems.

The data obtained shows that the average scores of 7th grade gifted students on the scale are higher than the average scores of students at other grade levels. In addition, it is seen that the grade level with the lowest average score on the scale is the 8th grade. The data obtained shows that there is a significant relationship between the grade levels of gifted students and their epistemological belief levels. The data show that 5th and 7th grades differ positively and significantly from 6th and 8th grades at the level of epistemological belief. Some studies in the literature have found that the epistemological belief levels of 7th graders are higher than other grade groups. However, these studies show that as the grade level increases, epistemological belief levels also increase [4; 53].

The data obtained shows that students whose mothers have a master's degree or higher have a higher average score compared to other groups. Research results show that there is no significant difference between the mother's education level and epistemological belief of gifted

students. It is possible to say that as the education level of the mother increases, the epistemological belief levels of gifted students also increase. On the other hand, the data obtained shows that students whose fathers are university graduates have a higher average score on the epistemological belief scale. A significant relationship was found between father's education level and the epistemological belief levels of gifted students. The epistemological belief levels of students whose father's education level was university level were significantly higher than those of students whose father's education level was primary school. These results show that as the father's education level increases, the student's epistemological belief level generally increases. When the studies related to the field were examined, no study was found that investigated the relationship between students' epistemological beliefs and parents' educational status. However, there are many studies that reveal that parental educational status is related to students' academic success, attitudes and motivation [24; 59].

## Conclusion

It is of critical importance that gifted students have many contemporary skills, including a contemporary epistemological belief, considering the place of these individuals in society. In line with the purpose of the research, the epistemological belief levels of gifted students were evaluated within the framework of the variables of gender, age, grade level, pre-kindergarten education, and mother and father's educational status. The data obtained can be accepted as a guide for differentiated education programs to be prepared in line with the needs of gifted students.

As a result of the research, it was determined that the epistemological beliefs of gifted students did not differ according to gender, pre-school education and the educational status of the students' mothers. However, it is seen that age, grade level and the education level of the students' fathers have an impact on epistemological beliefs. In particular, the relationship between father's education status and epistemological beliefs of gifted students is a remarkable finding that requires detailed analysis. The fact that no previous study has been found on the subject also reveals the need for more detailed studies.

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