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AN EXAMINATION OF RELATIONSHIP BETWEEN GIFTED STUDENTS' SCIENTIFIC CREATIVITY AND SCIENCE-BASED ENTREPRENEURSHIP TENDENCIES

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ABSTRACT

The aim of the study is to reveal the relationship between science-based entrepreneurship tendencies and scientific creativity levels of gifted students. In this context, students' science-based entrepreneurship tendencies and scientific creativity levels were determined. In addition, it was investigated whether science-based entrepreneurship and scientific creativity differ by gender, age and education program variables. Finally, it was discussed if scientific creativity is a predictive variable for science-based entrepreneurship. As a method, correlational research design, which is one of the quantitative research method designs, was used. The sample of the study consisted of 165 gifted students studying in a Science and Art Center (SAC) located in the Eastern Anatolian Region of Turkey in the 2019-2020 academic years. Science Based Entrepreneurship Scale (SBES) and Scientific Creativity Scale (SCS) were used as data collection tools. In the findings of the research, it was found that gifted students have a moderate level of scientific creativity and their level of science-based entrepreneurship is above average. Also, students' science-based entrepreneurship tendencies and scientific creativities do not differ by gender, age and program variables. Lastly, it was found that there was a moderate and positive correlation between scientific creativity and science-based entrepreneurship scores of gifted students and scientific creativity was a predictor of science-based entrepreneurship. At the end, these results were discussed based on the related literature and necessary recommendations were done.

Keywords: Science-Based Entrepreneurship, Scientific Creativity, Gifted Students, Science and Art Centers

INTRODUCTION

The developments in science, industry and technology has affected education as well as other fields. As a result of the adoption of new education approaches, countries make updates in their curriculums. Turkish educational programs were also updated in 2005, 2013, and 2018 (Ministy of National Education [MoNE], 2018). In this context, science curriculum was also updated in accordance with the new education system. When the current science curriculum is examined, it is seen that scientific process skills, engineering design skills, life skills such as decision making, creativity, entrepreneurship, communication and teamwork were included in the program (MoNE, 2018). Since the entrepreneurship is a different and relatively new skill in educational environments, a special importance is given to it by the researchers (Deveci, 2018a).

Although it has newly found a place in the education curriculums, entrepreneurship is a skill that has been discussed for many years. Although there is no general definition for entrepreneurship concept, Schumpeter attributes a modern meaning to entrepreneurship and has associated entrepreneurship with the concept of innovation (Tamasy, 2006). Huerta de Soto (2010) evaluated entrepreneurship in the context of action and defined this concept as the ability to analyze all opportunities.

The importance of entrepreneurship education is emphasized by the business and economic world (European Commission, 2013). Because the acquisition of entrepreneurship skills such as planning, organization, academic risk taking, communication, teamwork is important for individuals to be successful and productive in their professional life (Harari, 2018). In this context, entrepreneurship should be acquired by individuals through practical applications rather than theoretical (Sijde et al., 2008). Therefore, it is thought that determining entrepreneurship tendencies of the students will help to create learning environments suitable for the development of these skills (Deveci, 2018b).

Entrepreneurship is also related to scientific creativity. Scientific creativity is an important concept especially in science. Studies show that there is a positive relationship between scientific development and scientific creativity. However, there is no accepted common definition for scientific creativity (Demirhan, Önder, & Beşoluk, 2018). Sak and Ayas (2013) defined scientific creativity as presenting different, original ideas and products in the field of science. On the other hand, according to Hu and Adey (2002), scientific creativity is imagining and finding new techniques to discover and to solve a problem. The feature that distinguishes scientific creativity from general creativity is that in scientific creativity content knowledge is taken into consideration during creative thinking. Scientific creativity has theoretical, practical, and systematic aims to solve a scientific problem. Therefore, it is necessary to examine scientific creativity separately from general creativity (Hu & Adey, 2002).

Creative thinking has many dimensions such as fluency, flexibility, originality, problem recognition, detailing, logical thinking, guessing, understanding and solving complex problems (Dağlıoğlu, 2010). Among these dimensions, while fluency is defined as the ability to generate ideas against problems (Jaarsveldt, 2011), flexibility is defined as adapting to new situations and events. Originality is the ability to find different solutions to the problems (Kontaş, 2015). Considering the dimensions of creative thinking, the creativity levels may differ from person to person (Ergen, 2013). Therefore, it is considered to be important to reveal the creative thinking skills of gifted students.

Individuals who are superior to their peers in terms of talent, motivation and creativity are considered as gifted individuals (Renzulli, 1998). Gifted individuals can easily comprehend abstract thoughts. They enjoy solving math problems, and like observing and describing their environment (Webb, Gore, & Amend, 2007). In addition, these individuals have high critical thinking and problem-solving skills (Mirman, 2003). Special attention should be given to the education of these students and appropriate learning environments should be created to develop their skills, motivation, creativity and entrepreneurship.

Although studies in the literature have suggested that different skills should be considered in the selection of gifted students (Siegler & Kotovsky, 1986), some important skills such as creativity and entrepreneurship are not taken into account in the evaluation and selection process of gifted students for science and art centres (SACs) in Turkey. Students are selected for these centers based on only intelligence tests (Kaplan, Doruk, & Öztürk, 2017). Therefore, it is believed that this study is important since it will provide knowledge about the scientific creativity and science-based entrepreneurship that are not evaluated during the selection of gifted students. The results of the study can provide information about possible criteria that might help the selection of gifted children for SACs. Therefore, it is important to examine entrepreneurship tendencies and scientific creativity of these students. When the literature is examined, there are a number of studies examining the scientific creativity of gifted students (Cutts & Moseley, 2001; Hacıoğlu & Türk, 2018; Kanlı, 2017). For example, Kanlı (2017) revealed that there is a significant and positive relationship between their scientific creativity and scientific attitude. Despite this, no studied examining the science-based entrepreneurship characteristics of the gifted students and the relationship between their scientific creativity and entrepreneurship

tendencies have been found. In this regard, it is thought that results of the research will be a resource for science teachers and researchers who want to work in this field. In line with all these explanations, it was aimed to examine science-based entrepreneurship tendencies and scientific creativity of gifted students in the present study. Therefore, the following research questions have been formulated:

a. What are the levels of entrepreneurial tendencies and scientific creativity of gifted students?
b. Do entrepreneurship tendencies and scientific creativity of gifted students differ significantly by gender?
c. Do entrepreneurship tendencies of gifted students differ significantly in terms of age?
d. Do entrepreneurship tendencies and scientific creativity of special talented students differ according to the program they are studying?
e. Is there a significant relationship between entrepreneurial tendencies and scientific creativity levels of gifted students?
f. Are the scientific creativity levels of the gifted students a predictor of entrepreneurship?

METHODOLOGY

Research Design

In this research, survey design, which is one of the quantitative research method designs, was used. In survey research, researchers aim to describe a situation as it exists (Büyüköztürk, 2017). Since the aim of this study is to examine the scientific creativity and science based entrepreneurship tendencies of gifted students, survey design is used.

Population and Sample

The sample of the study consists of 165 gifted students studying in a Science and Art Center (SAC) located in the Eastern Anatolian Region of Turkey in the 2019-2020 academic years. Convenient sampling method was used in the selection of the participants. Demographic information of the sample is given in Table 1.

Table 1
Participants' Demographic Information

	F	%
Gender		
Female	92	55.80
Male	73	44.20
Age		
6-10	56	33.90
11-15	67	40.60
16 and above	42	25.50
Program		
Support Education (Support)	45	27.30
Recognizing Individual Skills (RIS)	43	26.10
Developing Special Skills (DSS)	38	23.00
Project Development and Management (Project)	39	23.60

Data Collection Tools

Science Based Entrepreneurship Scale (SBES) developed by Deveci (2018a) was used to determine the science-based entrepreneurship tendencies of gifted students. The scale, prepared as a 5-point Likert type, consists of 13 items under four dimensions (Risk Taking, Need for Success, Team Work and Effective Communication). The minimum score that can be obtained from the scale is 13 (13x1), the maximum score is 65 (13x5). In the study conducted by Deveci (2018b), the Cronbach alpha reliability

coefficient of the scale was found to be .76. In the current study, reliability coefficient of the scale was found to be .85. In addition, as a result of the confirmatory factor analysis, it was determined that the scale can be used with its four-dimensional structure (x^2=174.68, df= 59, x^2/df=2.45, NFI= 0.87, NNFI= 0.87 CFI= 0.90, IFI= 0.91, GFI= .86).

In the research, Scientific Creativity Scale (SCS) developed by Hu and Adey (2002) and adapted to Turkish by Deniş-Çeliker and Balım (2012) was used to examine the scientific creativity levels of gifted students. The scale consists of seven open-ended questions and includes all sub-dimensions of the scientific creativity model. Questions 1, 2, 3 and 4 are evaluated in terms of fluency, flexibility and originality, while questions 5, 6 and 7 are evaluated in terms of flexibility and originality.

For example; the evaluation of the answers to the 1st question is done as follows. For fluency score, one point is given for each answer of the students regardless of its quality. Flexibility score can be maximum nine for one correct method. Three points can be obtained for instrument, three points can be obtained for principles and three points can be obtained from procedure. For originality score; two points are given if the probability of the given method is less than 5%, one point is given if the probability is between 5-10% and no point is given if the probability is more than 10% (Hu & Adey, 2002). Cronbach's Alpha reliability coefficient of the original scale is calculated by Hu and Adey (2002) as 0.89. Deniş-Çeliker and Balım (2012) calculated as 0.86. In the current study, the reliability coefficient of the scale was found to be .75. Therefore, the scale was considered to be a reliable and used in the study.

Data Analysis

In the analysis of research data, descriptive statistics were first performed. Pearson Correlation Analysis was conducted to decide whether there is a relationship between students' scientific creativity levels and entrepreneurship tendencies. Regression analysis was carried out to decide whether the students' scientific creativity levels were a predictor of their entrepreneurship. In the analysis of the data, the level of significance was accepted as .05.

FINDINGS

Findings Regarding Entrepreneurship Tendencies and Scientific Creativity Levels

If all of the participants of the study give three (3) points to each item in the SBES, the average of the expected total score of the participants will be 39. According to the descriptive statistics of the study, the average of SBES scores was 48.25. Therefore, it can be said that science based entrepreneurship of gifted students is above the average.

While the lowest score that can be obtained from the SCS is zero (zero) and there is no limit for the highest score. In the study, the lowest score was eight (8), while the highest score was 97. The average of all participants was calculated as 43.42. It can be said that the average of the scores obtained from the scale is medium considering the lowest and highest values obtained from the scale.

Findings Related to the Gender Variable

In the study, normality of the scientific creativity and entrepreneurship scores of female and male students was checked and it is seen that data is distributed normally for both females and males. The results are given in Table 2.

Table 2
Normality Test Results for Gender Variable

		Kolmogorov-Smirnov[a]		
	Gender	Statistic	df	Sig.
SCS	Male	.08	73	.20
	Female	.09	92	.09
SBES	Male	.10	73	.07
	Female	.06	92	.20

The averages of the scores of the female and male students from both scales are calculated and given in Table 3. Whether there is a significant difference between these averages was tested using independent samples t test and the results are given in Table 4.

Table 3
Averages Regarding Gender Variable for SBES and SCS

		Mean	
	Gender	Statistic	Std. Error
SBES	Male	48.64	.88
	Female	47.94	.81
SCS	Male	42.89	1.69
	Female	43.84	1.80

Table 4
Independent Samples t-Test Results Regarding Female and Male Students' SCS and SBES Scores

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
SCS	Equal Variances Assumed	5.44	.02	-.38	163	.71
	Equal Variances Not Assumed			-.39	162.46	.70
SBES	Equal Variances Assumed	.03	.85	.58	163	.57
	Equal Variances Not Assumed			.58	156.93	.57

As it can be seen in Table 4, while variances are homogenous for SBES ($p > .05$), it is not homogeneous for SCS ($p < .05$) Therefore, in Table 4, the "Equal Variances Not Assumed" value for SCS and "Equal Variances Assumed" value are taken into consideration for SBES. And it is seen that there is no significant difference between the scores of female and male students for both the SCS [$t(162.46) = -.39$; $p > .05$] and the SBES [$t(163) = .58$; $p > .05$].

Findings Related to the Age Variable

In the study, students were divided into three (3) groups in terms of their ages. For this reason, ANOVA was conducted in order to understand whether there is a difference between the scores of the students having different age groups from the SCS and SBES. Before carrying out ANOVA, normality and variance equality assumptions were checked and it is seen that data show normal distribution for all age groups. Also, while the assumption of homogeneity of variances is violated for SCS, the variances are distributed homogeneously for SBES. The results are given in Table 5 and Table 6.

Table 5
Normality Test Results for Age Variable

		Kolmogorov-Smirnov[a]		
	Age	Statistic	df	Sig.
SCS	6-10	.11	56	.10
	11-15	.06	67	.20
	16 and above	.08	42	.20
SBES	6-10	.10	56	.20
	11-15	.07	67	.20
	16 and above	.12	42	.11

Table 6
Levene Statistics of Age Variable

	Levene Statistic	df1	df2	Sig.
SCS	4.38	2	162	.01
SBES	.06	2	162	.94

Since the assumption of homogeneity of variances was violated for SCS, it was decided to use Dunnett's C analysis in the pair comparison. For SBES, Tukey analysis was performed since the variances were homogeneous. After homogeneity test, the averages of the groups were calculated and ANOVA was conducted. Results are given in Table 7 and Table 8.

Table 7
Averages Regarding Age Variables for SCS and SBES

		Mean	
	Age	Statistic	Std. Error
SBES	6-10	49.42	1.03
	11-15	47.77	.91
	16 and above	47.45	1.24
SCS	6-10	44.37	2.60
	11-15	43.77	1.71
	16 and above	41.59	2.19

Table 8
ANOVA Results Regarding SCS and SBES scores for Age Variable

		Sum of Squares	df	Mean Square	F	Sig.
SCS	Between Groups	199.42	2	99.71	.38	.68
	Within Groups	42242.89	162	260.76		
	Total	42442.30	164			
SBES	Between Groups	119.55	2	59.78	1.00	.37
	Within Groups	9649.76	162	59.57		
	Total	9769.31	164			

In Table 8, it can be seen that the scores of the gifted students from SCS [$F(162) = .38$; $p > .05$] and SBES [$F(162) = 1.00$; $p > .05$] do not differ according to the age variable. In other words, there is no significant difference between the scientific creativity and science-based entrepreneurship of gifted students in the age groups 6-10, 11-15 and 16 and above.

Findings Related to the Program Variable

Students in SACs in Turkey are studying in four different programs. For this reason, ANOVA was performed to compare SCS and SBES scores of students studying in these four different programs. Before conducting ANOVA, the normality assumptions and equality of variances were checked. The results are given in Table 9 and Table 10.

Table 9
Normality Test Results for Program Variable

		Kolmogorov-Smirnov[a]		
	Program	Statistics	df	Sig.
SBES	Support	.10	45	.20
	RIS	.11	43	.20
	DSS	.09	38	.20
	Project	.11	39	.20
SCS	Support	.08	45	.20
	RIS	.13	43	.08
	DSS	.11	38	.20
	Project	.08	39	.20

Table 10
Levene Statistics of Program Variable

	Levene Statistic	df1	df2	Sig.
SCS	1.79	3	161	.15
SBES	.47	3	161	.70

As can be seen in Table 9 and Table 10, data is normally distributed for all SAC programs and homogeneity of variances is not violated. After checking these assumptions, ANOVA was carried out and the average scores of students studying in different programs were calculated. The results are given in Table 11 and Table 12.

Table 11
Averages for SBES and SCS Regarding Program Variables

		Mean	
	Program	Statistic	Std. Error
SBES	Support	49.55	1.07
	RIS	47.32	1.17
	DSS	48.52	1.25
	Project	47.51	1.33
SCS	Support	43.33	2.83
	RIS	42.86	2.50
	DSS	46.18	2.22
	Project	41.46	2.28

Table 12
ANOVA Results Regarding SCS and SBES Scores for Program Variable

		Sum of Squares	df	Mean Square	F	Sig.
SCS	Between Groups	453.74	3	151.25	.58	.63
	Within Groups	41988.57	161	260.80		
	Total	42442.30	164			
SBES	Between Groups	137.54	3	45.85	.77	.51
	Within Groups	9631.77	161	59.83		
	Total	9769.31	164			

In Table 12, it is seen that the scores of the gifted students do not differ according to the program variable for SCS [$F(161) = .58$; $p > .05$] and SBES [$F(161) = .77$; $p > .05$].

Findings Regarding the Relationship between Scientific Creativity Levels and Entrepreneurship Tendencies of Gifted Students

Correlation analysis was conducted to test whether there is a significant relation between science-based entrepreneurial tendencies and scientific creativity levels of gifted students. The results of the correlation analysis are given in Table 13.

Table 13
Correlation Results

		SBES
SCS	Pearson Correlation	.32
	Sig. (2-tailed)	.00
	N	165

As seen in Table 13, there is a moderate (Cohen, 1988) and positive correlation between scientific creativity and science-based entrepreneurship scores of gifted students ($r = .32$, $n = 165$, $p<.01$). According to this result, it can be said that as students' scientific creativity increases, science-based entrepreneurship also increases.

Findings Related to the Predictive Power of Scientific Creativity on Science Based Entrepreneurship

Within the scope of the research, linear regression analysis was carried out to investigate whether the scientific creativity of gifted students is a predictor for science-based entrepreneurship. Before carrying out the regression, normality of scientific creativity and science-based entrepreneurship scores was checked. In addition, there was a linear relationship between these two variables. The results obtained from the regression analysis are given in Table 14.

Table 14
Results of Regression Analysis

Dependent Variable	Independent Variable	R^2	t	Beta	F	p
Science-Based Entrepreneurship Tendency	Scientific Creativity	.10	4.31	.32	18.59	.00

As a result of simple linear regression analysis, it can be said that scientific creativity is a predictor of science-based entrepreneurship ($R^2 = .102$, $p <.05$). According to this result, scientific creativity explains 10% of the total variance in science-based entrepreneurship. When the significance value in the table (p) is also examined, it can be said that scientific creativity is a significant predictor for science-based entrepreneurship.

DISCUSSION

Science-Based Entrepreneurship Tendencies and Scientific Creativity Levels of Gifted Students

Scientific creativity of the participants was evaluated according to the scores they got from SCS. However, it is difficult to interpret the result of this scale by itself, because there is no limit to the highest score that can be obtained from the scale. Therefore, a comment could be made based on the lowest and highest scores received from the scale. Different studies using the same scale were also examined in order to interpret the students' scores from SCS to include more information. In one of these studies, Kılıç and Tezel (2012) found the average score of 912 eighth grade students as 62.30 by using SCS. Kadayıfçı (2008) determined the scientific creativity of ninth grade students by using SCS. The

researcher reported that while the average scores of the scientific creativity post-test scores of the experimental group students using a teaching model based on creative thinking was 70.70, the average of the control group was 62.12. When the result of the current study is compared to the results of these studies in the literature, it is seen that the gifted students' scientific creativity scores are lower than that of their peers with normal development. This is not what is expected. Because gifted students are superior to their peers in terms of talent, motivation and creativity (Renzulli, 1998). In addition, gifted students develop their creativity based on their project-based education at SAC (Loveridge & Searle, 2009). Therefore, gifted students are expected to get relatively higher creativity scores from their peers. Contrary to this expectation, the results in the literature may be due to the subjective scoring of the scale by different raters. The nature of the scale is suitable to this.

As a second finding, entrepreneurship tendencies of gifted students were found to be above average. When the literature is reviewed, no study on entrepreneurship of gifted students has been found. However, similar results have reported in the previous studies determining the entrepreneurship levels of middle school students with normal development (Deveci, 2018b; Ortaakarsu & Can, 2019). As in scientific creativity, it can be interpreted that entrepreneurship education is not sufficiently included in SACs. In the literature on entrepreneurship, it was emphasized to be considered as a dimension of science education (Deveci & Çepni, 2017; Hilario, 2015).

Gender

Regarding gender, it is seen in the literature that the number studies examining the general creativity in terms of gender is more than studies on scientific creativity (Kanlı; 2017). According to Baer and Kaufman (2008), the results of the extensive research examining the change of general creativity by gender indicated that there was no difference between the creativity levels of different genders. In studies comparing scientific creativity of gifted students by gender (Kanlı, 2017, 2012; Tekin & Taşğın, 2009), had parallel results with the results of the current study. However, Kılıç and Tezel (2012) stated that the scientific creativity of female students is higher than that of male students. As can be seen, in the literature, there are results that are both parallel and different with the results of the current study.

It is seen in the literature that there is no significant difference in terms of entrepreneurship tendencies of females and males (Deveci, 2018b). In addition, Göksel and Ulucan (2019) concluded that entrepreneurship levels of high school students do not differ by gender. Unlike the results of the current study, Tican, (2019) and Deveci and Çepni (2015) reached on the conclusion that the entrepreneurship levels of male prospective teachers were higher than that of females. Besides these results, it is known that there has been a rapid increase in the number of women entrepreneurs in recent years and women entrepreneurs have encountered different obstacles and difficulties more than men (Kuratko, 2005). However, this is not the case according the results of current study. Considering entrepreneurship tendencies can affect people's career choices, it can be said that female gifted students can prefer jobs requiring entrepreneurship skills.

Age

According to the findings of the present study, scientific creativity and science-based entrepreneurship of gifted students did not differ by age variable. In the literature, there are different results reporting that creativity does not change by age (Hacıoğlu & Türk, 2018), it increases by age (Hu & Adey, 2002; Öncü, 2003) or it decreases as age increases (Findlay & Lumsden, 1988). Hacıoğlu and Türk (2018) concluded that there was no significant difference between the creativity of students at different grade levels as a result of the study in which gifted students were examined based on their grade level. Therefore, it can be said that the findings of Hacıoğlu and Türk (2018) supported the results of the current study. On the other hand, Öncü (2003) stated that, unlike the current study, the average of 12 and 13-year-old students' scientific creativity points were significantly lower than that of the 14-year-olds. Hu and Adey (2002) stated that there is a positive correlation between the ages of the students and their scientific creativity as a result of the study on the creativity levels of secondary school students. Findlay and Lumsden (1988), on the other hand, stated that there is a constant decline in creativity

from the age of 7 to early adolescence due to peer pressure and social relationships. When these different findings in the literature are evaluated, scientific creativity can be expected to increase as the age of the students increases scientific creativity can be expected to increase due to the increase in knowledge, experience and skills (Lubart, 1994). However, it is difficult to establish a linear relationship between age and creativity based on the results of the current study and different results in the literature.

Entrepreneurship tendencies also did not differ by age. No study investigating science-based entrepreneurship of gifted students has been found in the literature. However, there are studies examining the changes in entrepreneurship tendencies according to the class level variable which is thought to give similar results with age variable (Deveci, 2018b; Ortaakarsu & Can, 2019). Among these studies, Ortaakarsu and Can (2019) concluded that although there was no significant difference between their grade levels in terms of entrepreneurship tendencies, the entrepreneurship tendencies of students in the fifth grade were higher than six, seven and eighth grade students. Deveci (2018b) concluded that entrepreneurship tendencies decreased as the grade level of middle school students increased. In another study, Daşcı and Yaman (2014) reached to the conclusion that as the grade level increases, there is a decrease in students' tendency to take risks. Although the entrepreneurship levels of the students in the current study are not examined according to the grade level directly, it can be expected that the entrepreneurship will decrease as the age level increases. As a matter of fact, although there is no significant difference between the science-based entrepreneurship tendencies of students in different age groups in the current study, the average of 6-10 age groups was higher than the average of students in the 11-15 and 16 and above age groups. Based on this result, it can be said that the education given in SACs does not have an extra contribution on the entrepreneurship of students. In addition, central exams administered in the eighth grade in Turkey are likely to be a variable that causes a decline (Deveci, 2018b). The results regarding the age-related change of entrepreneurship tendency are supported by the findings related to the program variable that will be discussed in the next section.

Program Being Studied

In the study, it was seen that the scientific creativity of gifted students did not differ by program variable. Students enrolled in SAC get education in adaptation, support education, recognizing of individual skills, development of special skills and project production and management programs. There is a hierarchy between these programs, and students who complete a program move to a higher program. It is known that as individuals' knowledge and their experience increase, their creativity levels will increase (Lubart, 1994). Accordingly, students who are enrolled in the project program are expected to have higher creativity. In this regard, Akkaş (2013) found that students' scientific creativity at the end of the support education program was significantly higher than their level at the beginning of the adaptation program. In another study (Harkow, 1996) observed that creativity of gifted students can increase with the help of creative problem solving activities. However, in the current study, it is seen that the group with the lowest creativity score is the project group. One of the reasons for this result may be the age variable. Because, as discussed previously, there are results in the literature that the scientific creativity of students decreases due to peer pressure and interest shifts to social relations as their ages grow (Findlay & Lumsden, 1988).

According to findings of current research, entrepreneurship tendencies of the students also do not differ according to the program variable. No study was found in the literature comparing entrepreneurship of gifted students according to the programs they study. However, when the literature on entrepreneurship is analyzed, it can be expected that entrepreneurship tendencies will increase as gifted students move to higher programs within SACs. Drucker (1985), one of the important management scientists says "The entrepreneurial mystique? It's not magic, it's not mysterious, and it has nothing to do with the genes. It's a discipline. And, like any discipline, it can be learned". In this context, it can be expected that students studying at higher programs of SAC will have more knowledge and experience related to entrepreneurship.

Correlation and Predictive Power

According to findings of the research, it can be said that science-based entrepreneurship increases as scientific creativity increases. In addition, it is seen that scientific creativity of gifted students explains 10% of the variance in science-based entrepreneurship scores. Although this rate is relatively low, it is acceptable in social and human science researches since it is difficult to predict human behaviors (Cohen, 1992). In the literature, supporting the findings of the current study, it is stated that there is a relationship between personality traits such as creativity, risk taking, initiative, environmental sensitivity and self-confidence (Yar Hamidi, Wennberd, & Berlung, 2008). In addition, creativity is thought to play an important role in developing entrepreneurial tendencies (Ward, 2004). Entrepreneurs have a number of personality traits that entrepreneurship requires, such as risk-taking, being curious and being aggressive (Marcati, Guido, & Peluso, 2008). Based on the results of the current study and the results in the literature, it can be concluded that scientific creativity is a variable that should be taken into consideration in the studies for the development of science-based entrepreneurship of both gifted students and their peers with normal development.

CONCLUSION

Based on the above discussions, it can firstly be concluded that the scientific creativity level of gifted students is medium, while science-based entrepreneurship tendency is high. Secondly, there is no significant difference between the scientific creativity and science-based entrepreneurship by genders, age and program variables. Thirdly, there is a moderate and positive relationship between scientific creativity and science-based entrepreneurship of gifted students. Lastly, it can be concluded that scientific creativity of gifted students is a predictor for their science-based entrepreneurship. Based on these conclusions, it is suggested that studies comparing the scientific creativity of gifted students with those of their peers with normal development and that are scored by independent raters using objective criteria should be carried out. As another suggestion, it can be offered that entrepreneurship dimension should not be ignored and a number of activities which will enhance scientific entrepreneurship skill should be increased in science education held in SACs. Similarly, scientific creativity should be emphasized in the education of gifted students and students should be given more opportunities to reflect their creativity.

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