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A Comparison of Entrepreneurship of 5th-Grade Gifted and Non-Gifted Students

Avni YILDIZ [a*] **, & *Engin KARADUMAN*** [b]

a Assoc. Prof. Dr., Zonguldak Bülent Ecevit University, https://orcid.org/ 0000-0002-6428-188X * yildiz.avni@gmail.com
b Asst. Prof. Dr., Zonguldan Bülent Ecevit University, https://orcid.org/0000-0001-7672-5823

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Abstract

Developing entrepreneurial skills at all educational levels, but especially in the early years of education is critical for growing individuals that are able to adapt to a world that is rapidly changing and for the development of society at large. In order to stimulate students' entrepreneurial endeavors, educators, policymakers, and scholars need to understand the characteristics of their entrepreneurial behavior. The goal of this study was to investigate a number of variables connected to the relative features of entrepreneurship, such as leadership and leadership responsibility, personal gain, need for achievement, and self-confidence, among gifted and non-gifted fifth graders. The present study employs a descriptive research model in order to reach generalizations by comparing some variables and entrepreneurship between gifted students and 5th-grade students who are not identified as gifted. Additionally, the causal comparison approach was utilized, by examining the research question separately by gender, school type, participation in science activities outside of school, the choice of a career related to mathematics and the perception of competence in mathematics. In terms of the scale, the results of the research show that there is no significant difference between gifted students and students without a diagnosis of giftedness. However, the average for gifted students is higher than the average for non-gifted students.

Keywords: Entrepreneurship, gifted students, non-gifted student

5. Sınıf Üstün Yetenekli ve Üstün Yetenekli Olmayan Öğrencilerin Girişimciliklerinin Karşılaştırılması

Öz

Girişimcilik becerilerinin tüm eğitim seviyelerinde, özellikle de formal eğitimin ilk yıllarında geliştirilmesi, hızla değişen dünyaya uyum sağlayabilen bireyler yetiştirmek ve genel olarak toplumun gelişimi için kritik öneme sahiptir. Öğrencilerin girişimcilik özelliklerini teşvik etmek için eğitimciler, kural koyucular ve akademisyenler bu öğrencilerin girişimci davranışlarının karakteristik özelliklerini anlamalıdırlar. Dolayısıyla bu çalışmanın amacı, 5. sınıf düzeyindeki üstün yetenekli tanısı olan öğrenciler ve üstün yetenekli tanısı almayan öğrenciler arasında liderlik ve liderlik sorumluluğu, kişisel kazanım, başarı ihtiyacı ve özgüven gibi girişimciliğin göreli özellikleri hakkındaki bir takım değişkenleri incelemektir. Bu çalışmada, üstün zekalı öğrenciler ile üstün zekalı olarak tanımlanmayan 5. sınıf öğrencileri arasındaki girişimciliği bazı değişkenler açısından karşılaştırarak genellemelere ulaşmak için betimsel bir araştırma modeli kullanılmıştır. Ayrıca araştırma sorusu cinsiyet, okul türü, okul dışında bilimsel etkinliklerine katılım, matematik ile ilgili bir kariyer seçme ve matematikte yeterlilik algısı tercihlerine göre ayrı ayrı incelenerek nedensel karşılaştırma yaklaşımından yararlanılmıştır. Araştırma bulgularına göre ölçeğin genelinde üstün yetenekli öğrenciler ile üstün yetenekli tanısı konulmayan öğrenciler arasında anlamlı bir farklılık olmadığı fakat üstün yetenekli öğrencilerin ortalamasının üstün yetenekli olmayan öğrencilerin ortalamasından fazla olduğu görülmüştür. Buna rağmen her iki grupta da ortalamaların orta düzeyde olduğu tespit edilmiştir.

Anahtar kelimeler: Girişimcilik, üstün yetenekli öğrenciler, üstün yetenekli olmayan öğrenciler

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INTRODUCTION

In the economic and social development of a country, entrepreneurship plays an important role and the act of construction creates jobs, offers innovative solutions, improves the standard of living, reduces poverty, and ensures the effective use of resources as well as creating economic and social value (Kelley, Singer & Herrington, 2016). An open topic in the study of entrepreneurship is to investigate the willingness of individuals to become entrepreneurs and how their characteristics and outlook toward entrepreneurship influence the decisions they make regarding whether to become entrepreneurs, whether they see entrepreneurship as a good career choice, and how feasible they believe it to be (Che Embi, Jaiyeoba & Yussof, 2019). It has been empirically shown that there was a correlation between the students who were entrepreneurially inclined compared to those who were not entrepreneurially inclined, except for their tolerance for ambiguity and level of self-confidence, all the entrepreneurial traits had a significant difference (Gürol & Atsan, 2006). Frese (2009) argues that achievement attitude, control orientation (self-efficacy), entrepreneurial sense, and risk-taking tendencies are important personal characteristics of entrepreneurial orientation, while experience, mental ability, and expertise are important factors of entrepreneurial orientation as well. An additional research study examined whether the characteristics of the personality can affect an individual's entrepreneurial attitude, and researchers found that the personality traits were beneficial in predicting entrepreneurial intention as illustrated by the results (Karabulut, 2016). As a result, it is necessary to prepare learning environments that will promote entrepreneurship skill development in students, especially within the context of schools, where students have the opportunity to develop these skills as early as possible (Eraslan, 2011). In addition to the aforementioned studies, a number of additional research investigations have studied the association between personality traits and entrepreneurial behavior. Baumgartner, Fisch and Aigner (2018) discovered that persons with high scores on qualities such as openness to experience, conscientiousness, and extraversion were more inclined to engage in entrepreneurial action. Similarly, Li, Lu and Wang (2017) discovered that people with more emotional stability and self-esteem were more likely to establish their own enterprises. In addition, education and prior work experience have been demonstrated to influence a person's desire to become an entrepreneur. According to a study by Kautonen, van Gelderen and Fink (2013), persons with past work experience in small enterprises are more likely to start their own businesses, whereas those with higher levels of education are more likely to pursue careers with established corporations.

Particularly, it is mentioned that students are recommended to gain an understanding of entrepreneurship during the age range of 11-12 years old (Hassi, 2016). A literature review on entrepreneurship indicates there are some positive reports (Bartulović & Novosel, 2014) about the benefits of entrepreneurship for students, however, no research has been published for comparing the performance of gifted students in their fifth-grade year with students who are not considered gifted in their 11-12 years of education.

Literature Review

Entrepreneurship can be presented as a viable alternative to dependent employment through interventions in the educational system (do Paço, Ferreira, Raposo, Rodrigues & Dinis 2015). The evidence supporting a positive link between education and entrepreneurship is strong and compelling (Oosterbeek, van Praag & Ijsselstein, 2010). The consensus is that childhood and early adolescence are the ideal times to develop a positive attitude toward entrepreneurship and to acquire some basic knowledge and information about it (Peterman & Kennedy, 2003). In developing educational programs suitable for fostering entrepreneurial skills and business creation, knowledge of the most influential characteristics of student entrepreneurs can be crucial (Oosterbeek et al., 2010). Therefore, this section will be devoted to presenting the characteristics and skills of entrepreneurial individuals, as well as the entrepreneurial tendencies of gifted students.

Students' entrepreneurial characteristics have recently become a topic of interest in the entrepreneurship and strategy literature (Salamzadeh et al., 2014). Understanding and forecasting entrepreneurial intentions require research into the inspiration and factors that contribute to entrepreneurial intention (Krueger, Reilly & Carsrud, 2000). Entrepreneurs need to take risks and identify new and valuable opportunities in the marketplace by engaging in imaginative thinking, being familiar with available resources, and by using appropriate business plans when implementing entrepreneurial initiatives (Wang, Lai & Lu, 2020). In a study conducted in Indonesia, university students displayed higher levels of controlling behaviors, achievement needs, risk-taking dispositions, creativity, networking, and tolerance for entrepreneurship (Kusmintarti, Thoyib, Maskie & Ashar 2016). Furthermore, researchers have identified six major characteristics that indicate a person's capacity to be successful as an entrepreneur: commitment, determination, autonomy, locus of control, risk-taking, tolerance for ambiguity, and confidence (Gürol & Atsan, 2006).

Entrepreneurship talent is characterized by several specific characteristics associated with it, such as perseverance, optimism, early exposure to challenges, tough character, flexibility, and independence of thought (Shavinina, 2008). As Setiawan (2014) suggested, a successful entrepreneur is one who consistently produces and assembles estimated costs around the appearance of chance. According to different studies, entrepreneurship relies on a range of factors, such as facilitation, innovation, creativity, self-efficacy, calculated risk-taking, etc. which all contributes to successful entrepreneurship (Shakir, 2019). A study puts more emphasis than ever on fostering creativity in the 21st century through education, and invention-gifted education is a good way to promote creativity and develop invention ability (Lee, 2016). This emphasizes the necessity for educational programs that promote and foster the development of entrepreneurial and innovative talents in talented individuals. Gifted students have been identified as those who exhibit a strong sense of reasoning, good memory, good moral judgment, and the ability to use numbers effectively (Maker & Nielson, 1996). Students who are gifted enjoy exploring possibilities for solutions to problems and generating new ideas. In addition to showing a variety of characteristics that are similar to those of successful individuals engaged in entrepreneurship and innovation, gifted students also demonstrate a great deal of initiative and an insatiable desire for discovery and experimentation (Shavinina, 2012). There has been a lot of research into the correlation between giftedness and entrepreneurial success. Many of the qualities prized in successful business owners are also common among the gifted, including originality of thought and the willingness to take risks. According to a study by Maker and Nielson (1996), gifted persons have a strong sense of logic, a good memory, high moral judgment, and the ability to use numbers efficiently, all of which contribute to their entrepreneurial success. Moreover, according to a study by Shavinina (2008), entrepreneurs tend to possess characteristics such as tenacity, optimism, early exposure to adversity, a tough character, adaptability, and intellectual independence, which are also typical of gifted persons. Literature reveals, in conclusion, that gifted individuals exhibit a number of highly valued traits and attributes, including creativity, inventive thinking, and the capacity to take calculated risks. In addition, educational programs that promote and cultivate the development of entrepreneurship and innovation abilities can assist in fostering creativity in gifted individuals.

Purpose of the Study

The purpose of the research is to determine the relative characteristics of entrepreneurship between gifted and non-gifted 5th-grade students in relation to some variables. The study aims to compare the entrepreneurial traits and skills of gifted and non-gifted students and examine any differences between the two groups. Despite the increasing popularity of entrepreneurship education and its positive effects on students, there has been no research published on the performance of gifted fifth graders compared to students who are not identified as gifted in their 11-12th grade years. Hence, the purpose of this study is to fill this gap in the literature and examine the relationship between giftedness and entrepreneurship.

In particular, entrepreneurial education is increasingly regarded as a critical development process that enhances young people's propensity toward becoming entrepreneurs and entails their likelihood to become more entrepreneurial in the future (Imaginário et al., 2016). Given this observation, it comes as no surprise that, during the past decade, a growing number of countries have purposefully introduced or integrated entrepreneurship into their school curricula. The process of entrepreneurship education must reach individuals in a culturally sensitive manner, such that information concerning how to become an entrepreneur must be imparted within the framework of the culture in which they live (Lee & Peterson, 2000). There have been many national strategies developed in recent years in order to make entrepreneurship education a progressive structure in several countries throughout Europe, such as specific strategies for improving entrepreneurship education, education reforms, and lifelong learning (Vilcov & Dimitrescu, 2015). There is a growing awareness in Turkey of the importance of entrepreneurship, and creating a culture in which entrepreneurship is cultivated and valued as a paradigm upon which local and national governments and politicians place increased emphasis every day (Bulut & Aslan, 2014). European countries are increasingly promoting entrepreneurship education, for instance, eight countries have launched specific strategies to promote entrepreneurship education, while another 13 have integrated it into their national strategies relating to lifelong learning including Turkiye (Vilcov & Dimitrescu, 2015). As a point of reference, the new curriculum has interdisciplinary concepts that are correlated with lessons and life skills, and one of the topics included is entrepreneurship (MoNE, 2019). Increasingly, entrepreneurship education has become a popular topic among both young individuals and students in recent years due to the fact that it has been shown to engender a lasting interest in entrepreneurship during the life of the individual and Students who are introduced to entrepreneurial activities at an early age can be instilled with an entrepreneurial spirit by being exposed to entrepreneurial activities at an early age (Torimiro & Dionco-Adetayo, 2005). According to a study analyzing the

entrepreneurship education effects on primary school students, entrepreneurship education seemed to have a positive impact on their non-cognitive entrepreneurship skills (Huber et al., 2014). In the United States, there are several successful examples of entrepreneurship education programs that encourage kids to develop their entrepreneurial skills, including "Mini Society", created by Marilyn Kourilsky to benefit students aged 8-12. It has shown to be effective in stimulating students' interest in the concept of entrepreneurship (Kourilsky & Carlson, 1996). By introducing the “Entrepreneurs in Kentucky Initiative”, the Kentucky Council also enhanced children’s knowledge and attitude toward entrepreneurship and contributed to developing a sense of entrepreneurial curiosity (Code, 2006). It appears from a review on entrepreneurship education that there are some positive reports about entrepreneurship being beneficial to students, but no research has been published on the performance of gifted fifth graders compared to students who are not identified as gifted in their 11-12th grade years. Thus, the purpose of this study is to determine the relative characteristics of entrepreneurship between gifted and non-gifted 5th-grade students in relation to some variables.

Research Questions

The research problem of this study is determined as “How gifted and non-gifted 5th-grade students’ entrepreneurship differ according to some variables?”. The sub-problems addressed by the study are as follows:

1.Is there a significant difference between the entrepreneurial abilities of gifted and non-gifted 5th graders?

2.Is there a significant difference between the entrepreneurial abilities of gifted and non-gifted 5th graders based on gender?

3.Is there a significant difference between the entrepreneurial engagement of gifted and non-gifted 5th-grade students based on their involvement in scientific activities outside the regular classroom environment?

4. Is there a significant difference between the entrepreneurial abilities of gifted and non-gifted students of the 5th grade in terms of their choice of mathematics-related profession?

5. Is there a significant difference between the entrepreneurship of gifted and non-gifted 5th-grade students based on their perceptions of math competence?

METHOD

This chapter aims to provide information about the model of the research, the participants, data collection, the analysis, and the process of the study.

Model of the Research

This study employs a descriptive research model in order to reach generalizations by making comparisons of some variables and entrepreneurship between gifted students and 5th-grade students who were not diagnosed as gifted. The causal comparison approach was also employed in this study, as the research question was examined separately by gender, school type, participation in science activities outside of school, the choice of a career related to mathematics and the perception of competence in mathematics. Cohen and Manion (1994) stated that in causal comparison studies, there would be at least two groups that were affected by the same situation differently, or two groups that were affected and unaffected by the assumed situation, and these variables could be compared between these groups.

Participants

In the 2021-2022 school year, 254 students participated in the study, including 91 gifted students and 163 gifted students who were not diagnosed as gifted at the fifth-grade level. In this article, it is further stated that data on gifted students have been gathered from a Science and Art Center (SAC) located in the Western Black Sea region, and data on students who are not diagnosed as gifted have been collected from secondary schools within the same province. During this process, attention was paid to select the closest secondary school to the students in SAC in terms of academic success. The reason why students are chosen close to each other in terms of academic success is to examine whether the diagnosis of giftedness among successful students will make a difference in entrepreneurship. In making the selection of the school, the most successful school was determined by taking into account the average placement scores in high schools. As a result, the public school was selected in accordance with the criterion sampling method, one of the purposeful sampling techniques. The gender distribution of the participants is shown in Table 1.

Table 1. The Distribution of Students by Gender

	Gender	f
Gifted Students	Male	52
	Female	39
Students who are undiagnosed as gifted	Male	74
	Female	89

In accordance with the demographic characteristics of students represented in Table 1, 128 female (n=39 gifted, n=89 non-gifted) students (50.4%) and 126 male (n=52 gifted, n=74 non-gifted) students (49.6%) participated in this research.

Data Collection

In the scope of the research, the Entrepreneurship Scale for 5th Grade Students developed by Sontay, Yetim, Karamustafaoglu and Karamustafaoglu (2019) was utilized to assess the entrepreneurial tendencies of the students. There are 29 items on the scale, which are divided into four sub-dimensions. The self-confidence dimension contains ten items, the need for achievement dimension contains seven items, the personal gain dimension contains seven items, and the leadership and responsibility dimension contains five items. It is a 3-point Likert-type scale that is classified as "Always", "Sometimes" and "Never.". There are sixteen items on the scale that contain positive statements, and thirteen items that contain negative statements. A negative statement was coded into the program taking this into consideration. In order to collect data about independent variables, students were asked to put a mark in the appropriate related category for each variable before the scale.

Sontay et al. (2019) found the Cronbach's alpha internal consistency coefficient for the whole scale they developed 0.77, 0.91 for the first sub-dimension, 0.91 for the second sub-dimension, 0.94 for the third sub-dimension, and 0.82 for the fourth sub-dimension. In the data collected within the scope of this research, the Cronbach's alpha internal consistency reliability coefficients of the Entrepreneurship Scale for 5th Grade Students scale determined 0.84 for the whole scale, 0.93 determined for the first sub-dimension, 0.92 determined for the second sub-dimension, 0.94 determined for the third sub-dimension, 0.83 determined for the fourth sub-dimension. According to the data obtained, it can be said that the scale is valid and reliable for this research.

Data Analysis

Students were interviewed in the designated SAC and secondary schools in the city center, and the researchers provided an explanation of the research to the administrators of the institutions, who then applied the scale forms to the students with the support of the administration. A systematic numbering system was employed on the scale forms that emerged from the students in order to facilitate analysis. Analysis of the research data was conducted using the SPSS 23.00 package program.

Before beginning the analysis of the study, it was first determined if the independent and dependent variables were normally distributed in order to determine the distinction status of entrepreneurship according to various variables (Kolmogrow-Smirnow H test). Based on the results of the analysis, since the analysis detected normal distributions in all sub-problems, the unrelated groups' t-test was used to answer the first sub-problem, while the other sub-problems were addressed using one-factor ANOVA. While presenting the findings, they were coded both as gifted students (GS) and as students who were not diagnosed as gifted (NGS).

Research Ethics

All ethical procedures were performed in this study. Ethical permission of the research was approved by Zonguldak Bülent Ecevit University Social and Human Sciences Ethics Committee. Ethics committee document number is 13.05.2022-165623.

FINDINGS

Results Related to The First Sub-Problem

Table 2 presents the results of a comparative analysis of entrepreneurship among gifted and non-gifted fifth-grade students. The results were compared for the overall scale as well as each sub-dimension of the scale (leadership and leadership responsibility, personal gain, need for achievement, and self-confidence).

Table 2. T-test Results based on Mean Scores for Comparing Entrepreneurship of GS and NGS Students in Unrelated Groups

	Type of student	n	x̄	Ss	Sd	t	p
Self-confidence	GS	91	16.81	1.861	252	2.625	0.009
	NGS	163	17.50	2.086			
Need for Achievement	GS	91	18.47	2.244	252	-1.403	0.162
	NGS	163	17.98	2.071			
Personal Gain	GS	91	13.60	1.744	252	0.923	0.357
	NGS	163	13.84	2.064			
Leadership and leadership responsibility	GS	91	10.46	1.798	252	-3.394	0.001
	NGS	163	9.58	1.674			
Entrepreneurship Scale (Overall)	GS	91	59.35	3.944	252	-0.462	0.645
	NGS	163	58.90	4.292			

$p < 0.05$

The results in Table 2 demonstrate that there was no significant difference (t= -0.462, p> .05) between gifted students and students who were not diagnosed as gifted. Although there is not a significant difference, it is noteworthy that the average for gifted students is higher than the average for students who were not diagnosed as gifted for the overall scale. In the analysis of the sub-dimensions of the scale, it was found that there was a significant difference between gifted and non-gifted students in the categories of self-confidence (t=2.625, p< .05) and leadership and leadership responsibility (t=-3.394, p< .05). Analyzing the averages, it was determined that the significant difference in the sub-dimension of self-confidence favored students who are not identified as gifted, whereas the significant difference in the sub-dimension of leadership and leadership responsibility favored gifted students. Conversely, the averages for the other sub-dimensions and the scale in general are at a moderate level, with the exception of the Need for Achievement sub-dimension (GS:18.47, NGS:17.98, max:21).

Results Related to the Second Sub-Problem

In Table 3, the entrepreneurial activity of 5th-grade students who were not diagnosed as gifted and gifted was compared by gender.

Table 3. The Results of the One-Factor ANOVA Test Conducted for the Comparison of Entrepreneurship of GS and NGS Students by Gender Variable

Self-confidence	Factors contributing to the difference	The sum of the squares	d	Calculation of the mean square	F	p	The difference
	Groups	39.80	3	13.26	3.302	0.021	NGS F – GS M GS M - NGS M
	In Groups	1004.56	250	4.01			
	Overall	1044.36	253				
Need for Achievement	Groups	19.735	3	6.57	1.446	0.230	
	In Groups	1137.48	250	4.55			
	Overall	1157.21	253				
Personal Gain	Groups	11.68	3	3.89	1.020	0.385	
	In Groups	955.18	250	3.82			
	Overall	966.86	253				
Leadership and leadership responsibility	Groups	41.30	3	13.76	4.654	0.003	NGS F – GS M GS M - NGS M
	In Groups	739.59	250	2.95			
	Overall	780.89	253				
Entrepreneurship Scale (Overall)	Groups	44.15	3	14.71	0.847	0.469	
	In Groups	4343.83	250	17.37			
	Overall	4387.98	253				

$p < 0.05$ *Male GS M, NGS M / Female GS F, NGS F * Self-confidence x̄: NGS F: 17.51, GS M: 16.48, NGS M: 17.44

* Leadership and leadership responsibility x̄: NGS F: 9.53, GS M: 10.44, NGS M: 9.59

As shown in Table 3, the self-confidence (F: 3.302, p< .05), leadership, and leadership responsibility (F: 4.654, p< .05) sub dimensions were not significantly different by gender for the other two sub- dimensions and the overall scale. A significant difference was found in the sub-dimensions of self-confidence, leadership and leadership responsibility between groups of female who were not diagnosed as gifted and gifted male students, and between gifted and non-gifted males. Although there is a significant difference in the self-confidence sub-dimension in favor of students who are not diagnosed as gifted, when factors contributing to the difference in the Leadership and Leadership Responsibility sub-dimension are examined, they are in favor of the gifted students.

Results Related to The Third Sub-Problem

Table 4 summarizes the entrepreneurial activities of 5th-grade students who were not diagnosed as gifted versus those who were diagnosed as gifted based upon their participation in scientific activities outside of school.

Table 4. The Results of the One-Factor ANOVA Test Conducted in the Comparative Study of Entrepreneurship among GS and NGS Students According to a Variable of Participation in Out-of-School Scientific Activities

	Factors contributing to the difference	The sum of the squares	d	Calculation of the mean square	F	p	The difference
Self-confidence	Within Groups	50.90	3	16.96	4.270	0.006	GS Y– GS N
	In Groups	993.46	250	3.97			
	Overall	1044.36	253				
Need for Achievement	Within groups	10.91	3	3.63	0.793	0.499	
	In Groups	1146.30	250	4.58			
	Overall	1157.21	253				
Personal Gain	Within groups	6.85	3	2.28	0.595	0.619	
	In Groups	960.00	250	3.84			
	Overall	966.86	253				
Leadership and leadership responsibility	Within groups	52.49	3	17.50	6.006	0.001	GS Y– NGS Y GS Y– NGS N
	In Groups	728.39	250	2.91			
	Overall	780.89	253				
Entrepreneurship Scale (Overall)	Within groups	24.89	3	8.29	0.475	0.700	
	In Groups	4363.08	250	17.45			
	Overall	4387.98	253				

p < 0.05 *For Yes GS Y, NGS Y / For No GS N, NGS N * Self-confidence $\bar{x}$: GS Y: 17.70, GS N: 16.47

* Leadership and leadership responsibility $\bar{x}$: GS Y: 10.45, NGS Y: 10.00, NGS N: 9.35

According to Table 4 it is determined that participation in scientific activities outside of school is significantly correlated with the self-confidence sub-dimension (F: 4.270, p<.05). Upon examining the factors contributing to the difference, it was found that there was a significant difference between gifted students who participated in the scientific activity and those who did not (in favor of gifted students who participated in the scientific activity). The sub-dimensions of leadership and leadership responsibility also showed a significant difference (F: 6.106, p<.05). In this sub-dimension, the factors contributing to the difference were determined to be the participation of gifted students and students who are not diagnosed as gifted in the scientific activity (to the benefit of gifted students), and the participation of gifted students in the scientific activity and students who are not diagnosed as gifted who do not participate (to the benefit of gifted students). In other sub-dimensions and overall, there was no significant difference observed between the two groups according to the variable of participating in scientific activities.

Results Related to The Fourth Sub-Problem

The entrepreneurial activities of 5th-grade students who were not diagnosed as gifted and gifted students were compared in terms of their choices of profession related to mathematics, as shown in Table 5.

Table 5. Results of One-Factor ANOVA Tests Comparing Entrepreneurial Motivations of GS and NGS Students in Relation to Variables of Profession Selection Related to Mathematics

Self-confidence	Factors contributing to the difference	The sum of the squares	d	Calculation of the mean square	F	p	The difference
	Within groups	31.48	3	10.49	2.590	0.053	
	In Groups	1012.88	250	4.05			
	Overall	1044.36	253				
Need for Achievement	Within groups	37.08	3	12.36	2.759	0.043	The variances in the two samples are not equal, and there is no difference in the results of the James-Howell test.
	In Groups	1120.12	250	4.48			
	Overall	1157.21	253				
Personal Gain	Within groups	5.94	3	1.98	0.515	0.672	
	In Groups	960.92	250	3.84			
	Overall	966.86	253				
Leadership and leadership responsibility	Within groups	37.03	3	12.34	4.149	0.007	NGS Y - NGS N
	In Groups	743.86	250	2.97			
	Overall	780.89	253				
Entrepreneurship Scale (Overall)	Within groups	23.93	3	7.97	0.457	0.713	
	In Groups	4364.05	250	17.45			
	Overall	4387.98	253				

$p < 0.05$ *For Yes GS Y, NGS Y / For No GS N, NGS N

* Leadership and leadership responsibility $\bar{x}$: NGS Y: 9.52, NGS N: 10.34

Using Table 5, it can be observed that only two sub-dimensions showed significant differences based on 5th grade students' career choices relating to mathematics: need for achievement (F: 2.759, $p< .05$) and leadership and leadership responsibility (F: 4.149, $p< .05$). It is noteworthy that, although there was no significant difference within the groups for the need for achievement sub-dimension, factors contributing to the difference was found among the students who were not diagnosed with giftedness, who would choose a career related to mathematics or not. On the other hand, in leadership and leadership responsibility sub-dimension, the factors contributing to the difference were determined to be among the students who were not diagnosed with giftedness, who would choose a career related to mathematics or not (to the benefit of students' career choices not relating to mathematics).

Results Related to The Fifth Sub-Problem

The following table compares the perceptions of mathematics competence between gifted 5th-grade students and 5th grade students who have not been diagnosed as gifted.

Table 6. Results of the One-Factor ANOVA Test Conducted to Compare Entrepreneurship among GS and NGS Students Based on Perceptions of Competency in Mathematics

	Factors contributing to the difference	The sum of the squares	d	Calculation of the mean square	F	p	The difference
Self-confidence	Within groups	79.57	4	19.89	5.134	0.001	NGS 2 – GS 3
	In Groups	964.79	249	3.87			
	Overall	1044.36	253				
Need for Achievement	Within groups	141.78	4	35.44	8.692	0.000	GS 1 – GS 2 GS 1 – NGS 2 GS 1 – GS 3 GS 1 – NGS 3 GS 3 – NGS 2
	In Groups	1015.43	249	4.07			
	Overall	1157.21	253				
Personal Gain	Within groups	30.63	4	7.65	2.037	0.090	
	In Groups	936.23	249	3.76			
	Overall	966.86	253				
Leadership and leadership responsibility	Within groups	49.18	4	12.29	4.185	0.003	GS 3 – NGS 2 GS 3 – NGS 3
	In Groups	731.71	249	2.93			
	Overall	780.89	253				
Entrepreneurship Scale (Overall)	Within groups	58.98	4	14.74	0.848	0.496	
	In Groups	4328.99	249	17.38			
	Overall	4387.98	253				

$p < 0.05$ * "I am not sufficient" GS 1, NGS 1 / "Sometimes I am sufficient" GS 2, NGS 2 / "I am sufficient" GS 3, NGS 3

* Self-confidence $\bar{x}$: NGS 2: 17.94, GS 3: 16.45 * Need for Achievement $\bar{x}$: GS 1: 12.33, GS 2: 18.03, GS 3: 18.89, NGS 2: 17.80, NGS 3: 18.16

* Leadership and leadership responsibility $\bar{x}$: GS 3: 10.62, NGS 2: 9.49, NGS 3: 9.66

The analysis of Table 6 indicates that there is a considerable difference between the sub-dimensions of self-confidence (F: 5.134, p< .05), need for achievement (F: 8.692, p< .05), leadership, and leadership responsibility (F: 4.185, p< .05), based upon the perceptions of competence in mathematics among the 5th-grade students. With respect to the self-confidence sub-dimension, factors contributing to the difference are were not diagnosed as gifted students who indicated their mathematical capabilities as "sometimes" as opposed to those who were gifted as "I am sufficient". In relation to the sub-dimension of the need for achievement, it is noted that factors that contribute to the difference generally exist within all gifted groups. In regard to the leadership and leadership responsibility sub-dimension, it was determined that there was a significant difference between gifted students who stated their competencies as "sufficient", compared with students who were not diagnosed as gifted and who stated "sometimes I am sufficient" and "I am sufficient.".

DISCUSSION & CONCLUSION

The purpose of this study is to examine a variety of variables related to the characteristics of entrepreneurship, such as leadership and leadership responsibility, personal gain, the need for achievement, and self-confidence, among gifted students and those who are not identified as gifted in fifth grade. The causal comparison method was used to examine the research question in relation to individual characteristics, including gender, school type, participation in science activities outside of school, the educational background of both

parents, assistance sought when struggling with mathematics, choice of a career in mathematics, and the perception of competency in mathematics.

We found that the significant difference in the sub-dimension of Self-Confidence favored students who are not identified as gifted, while the significant difference in the sub-dimension of Leadership and Leadership Responsibility favored gifted students. For example, researchers discovered that talented students are more likely to desire leadership roles, and they believed that leadership was an intrinsic part of their talents, as opposed to non-gifted students (Lee, Matthews, Boo & Kim, 2021). Nonetheless, although the significant difference in the sub-dimension of Self-Confidence favored students who were not identified as gifted, the researchers in a study noted that acceleration had a positive impact on high-ability learners' social-emotional development, which included self-confidence (Steenbergen-Hu & Moon, 2011).

Meanwhile, the other sub-dimensions and the scale generally have moderate averages, except for the Need for Achievement sub-dimension. It is important to emphasize this finding since it may have adverse effects on the self-actualization of students who lack achievement motivation, which can contribute to their underachievement (Desmet & Pereira, 2021). Additionally, the existing research has indicated that educators, parents, and researchers have been concerned for decades about a lack of achievement motivation among gifted students (Reis & McCoach, 2000).

In spite of significant differences in the self-confidence sub-dimension favoring students who are not diagnosed as gifted, factors contributing to the difference in the Leadership and Leadership Responsibilities sub-dimension favor the gifted students. The characteristics of good leaders are similar to those of gifted individuals, according to similar research on the leadership profile of gifted students (Chauvin & Karnes, 1983). These findings are consistent with findings from the literature on the characteristics of gifted students. As an example, the Marland Report (1972), which is credited with defining giftedness for the first time, states that "leadership" is one of six areas of giftedness. It is still surprising how few studies on leadership have included gifted students as participants despite a positive association between intelligence and some aspects of leadership (Bégin & Gagné, 1994). Some differences emerged between gifted and non-identified students when it came to leadership style preferences, such as gifted students favoring the telling leadership style more highly than non-identified students favoring the abdicating leadership style (Lee et al., 2021).

We found that there were significant differences between gifted students who took part in the scientific activity and those who did not (in favor of gifted students who participated in the scientific activity) in terms of self-confidence, leadership and leadership responsibility. According to a recent study, researchers examined the effectiveness of a science camp to increase young gifted children's capacity to comprehend and understand science and based on their findings, the camp was effective in increasing the young children's knowledge about STEM areas and their understanding about science (Mohd Zahidi et al., 2021). In the differentiated model of giftedness and talent, Gagné (2000) explained giftedness as the potential that places an individual in the top 10% of peers his or her own age in a specific domain, whereas he elaborated that for these skills to be developed into talents, formal and informal learning processes are required. Engaging students in activities outside of the school setting will promote their interest in learning science, and one of the best ways to foster this is through exciting and motivating teaching strategies.

Based on the results of such a study, we found that two sub-dimensions showed significant differences with respect to the career choices made by 5th grade students relating to mathematics: Need for Achievement and Leadership and Leadership Responsibility. In addition, the studies found that vocation-related interests and values are strong predictors of educational and career-related decisions (with mathematics/spatial abilities being more important than verbal abilities), that investigative-type interests and theoretical values are beneficial to careers in mathematics and related fields, and that time commitment is critical to success in those fields (McCabe, Lubinski, & Benbow, 2020; Webb, Lubinski & Benbow, 2002).

The results of the analysis indicate that there is a significant difference between the sub-dimensions of Self-Confidence, Need for Achievement, Leadership, and Leadership Responsibility in regard to the perceptions of competence in mathematics among the 5th grade students. Research exploring gifted students' perceptions and skills related to STEM education have similar findings to existing research. Using the STEM education model, the researchers attempted to discover the perceptions and capabilities of gifted middle school students by establishing that the students were able to apply their science knowledge to their engineering problems and developed their mathematical skills through integrating the products they designed with other subjects (Kulegel & Topsakal,2021). Additionally, STEM education practices play an important role in discovering the perceptions and skills of gifted students, improving students' logical argumentation, scientific investigation, technological inquiry, and creative

thinking skills, and enabling them to make career choices (Kulegel & Topsakal, 2021) . These skills are vital for developing entrepreneurial capabilities in a wide range of educational environments.

Implications, And Suggestion For The Future Research

Based on the results of the research, it was found that there was no significant difference between gifted students and students who were not diagnosed as gifted in the scale, however, the average of gifted students was higher than the average of non-gifted students. It was noted, however, that the averages for both groups were at a moderate level. In this regard, it is recommended to organize seminars and in-class/out-of-class activities for families in order to increase and strengthen entrepreneurial skills, which are a crucial part of 21st-century employment. On the other hand, qualitative studies of some variables can be conducted to determine whether there are differences between groups with respect to certain sub-dimensions of the scale. In addition, gifted and non-gifted students for different grade levels need to be compared in terms of their entrepreneurial skills, and necessary precautions should be taken for both groups.

Statements of Publication Ethics

Ethical permission of the research was approved by Zonguldak Bülent Ecevit University Social and Human Sciences Ethics Committee. Ethics committee document number is 13.05.2022-165623.

RESEARCHERS' CONTRIBUTION RATE

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion	(Other)
Author 1	☒	☒	☒	☒	☒	☒	☐
Author 2	☒	☒	☒	☒	☒	☐	☐

Conflict of Interest

There is no conflict of interest in the study

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