

Perceptions of gifted students on their levels of creativity

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Abstract

Creativity and intelligence are among the basic characteristics of students. Gifted students are, however, seen as more creative and intelligent than their peers. This study aims to reveal the perceptions of gifted students about their creativity. The study group consists of 241 students at different grade levels studying at the science and art center. This descriptive research, which aims to examine the creativity perceptions of gifted students in terms of various variables, used the survey model. Research data was collected through the "How Creative Are You?" scale. Analysis of the data revealed that more than half of the gifted students found themselves to be above-average creatives. It was observed that there was no significant difference in the creativity perceptions of gifted students according to age, gender, place of residence, educational status of parents, effort to finish a job they started, or frequency of reading books.

Keywords: Art center; creativity, giftedness; science.

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1. Introduction

Gifted students are defined as students who learn faster than their peers, are ahead in creativity, art, and leadership capacity, have special academic abilities, can understand abstract ideas like acting independently of their interests, and perform at a high level (Han & Shim, 2019; Ling & Loh, 2020). Renzulli (1978), who examined individuals with high achievement throughout their lives, stated that there are three intertwined characteristics underpinning this superior performance. These three traits are above-average talent, motivation, and creativity. The American Congress (1978) defined the gifted student as "having a proven potential and ability at the pre-school, primary or secondary school level, exhibiting high-level performance or leadership ability in areas such as intellectuality, creativity, and specific academy, having outstanding achievements in visual fields, and whose activities cannot be adequately met by the school" (Babaeva & Voiskounsky, 2002).

It was observed that individuals who have been shaping societies from past to present are not the "passive majority" but the "active minority", who have competencies such as productivity, leadership, and creativity and have higher cognitive abilities than their peers. The present and future of the world need to allow individuals to develop their abilities and maximize their use of cognitive capacity (Cutts & Moseley, 2004; Allagui, 2022). Therefore, it is clear that intelligence and creativity will continue to be popular topics for researchers.

The dictionary of the Turkish Language Association (TLA) defines creativity as "realizing, developing, and producing something that has not been done before by making use of imagination, intelligence, and thought". Torrance (1962) expressed creativity as the process of being aware of problems, producing solutions to them, testing solutions, evaluating them and reaching results. He also developed the "Torrance Tests of Creative Thinking" (TTCT) for the measurement of creativity (Sternberg, 2006). Apart from this, measurements are also used, which measure artistic creativity based on performance and evaluate the productions of artists through referees (Yi, Plucker, & Guo, 2015). Again, there are applications in the literature that measure academic creativity, such as performance evaluations, hypothesis-making and testing, or the use of self-report scales (Ayas & Sak, 2014; Barbier, Donche & Verschuere, 2019).

Although there are other scales, such as the Gifted Rating Scale, to measure creativity, some studies in the relevant literature claim that creativity cannot be measured but only realized. de Alencar et al. (2021) expressed the consequences of having different dimensions of creativity and the problems related to the low validity and reliability of the tools used to measure these dimensions. It is accepted that creativity is a complex skill, even among researchers who argue that creativity is a measurable and observable skill (Treffinger, 2003).

Since it is clear that there is no consensus even on the definition of creativity, it is not possible to measure the creativity of gifted people, which is within the scope of the social sciences, objectively with one hundred percent accuracy, as in the positive sciences. It is understood that there is no consensus among researchers about the measurement methods of creativity or even whether this measurement is possible. This is why it is important to utilize all possible possibilities in the determination of creativity, which is a subjective concept. It is thought that this study, which can be considered as an attempt to determine creativity skill, on which a 100% consensus will never be reached considering its quality, will contribute to gaining a different perspective on the determination of creativity skill, even if a certainty cannot be reached.

Today's contemporary learning theories accept that the acquisition of knowledge and skills is not independent of the learner. The learner builds knowledge and skills through interaction with his environment. Therefore, the individual attributes meaning to learning through his beliefs and experiences (Boudourides, 1998 Von Glasersfeld, 1995, as cited in Şeker et al. 2012; Mangion & Riebel, 2023). Bandura (1977) defined the concept of learning as the body of knowledge gained in a cognitive process and stated that self-efficacy is effective in learning. According to Bandura's social cognitive theory, self-efficacy emerges as one of its basic principles. According to social cognitive theory, the

most important motivational structure behind the actions of individuals is self-efficacy beliefs. Increasing self-efficacy beliefs increases perseverance and determination, resulting in higher-level performance (Bandura, 1995).

Pajares (2009) regards the development and use of self-efficacy beliefs as an intuitive process. Successful execution of any job enables the individual to believe that the job will be carried out successfully in the future. In this sense, the beliefs that individuals have developed about their abilities are effective in determining what they can do (Pajares, 2009). Self-efficacy theory and self-efficacy beliefs not only form an important part of people's motivation and behavior, but they also affect actions that can change their lives. Bandura (1977) defines self-efficacy as "the belief in one's abilities to plan and carry out the forms of action needed to manage forward-looking situations". Lunenburg (2011) considered self-efficacy as an action-specific version of self-esteem. The basic principle of self-efficacy theory is that individuals are more likely to perform actions that they feel are competent and less likely to perform actions that they think are not sufficient (Gecas, 2004).

All these points show that it is essential for the success of individuals to know their perceptions as well as their abilities. Especially considering the problems related to the measurement of creativity, revealing the creativity of individuals with their perceptions may serve to explain the situation. Intelligence and creativity are associated with many researchers. In Renzulli's (2012) Three Ring Theory, gifted individuals are characterized as having higher cognitive skills, higher motivation to learn, and higher creativity compared to those with normal development. Sak (2020) stated that one of the most basic characteristics of gifted individuals is creativity and that individuals should develop their creative thinking skills. According to the Pentagon Theory developed by Sternberg and Zhang (1995), intelligence is extraordinary, rare, evidence-based, valuable, and productive. According to the Rhodes 4P model, psychometric tests and research on creativity state that creativity and intelligence are parallel to a certain extent. Although there is information that gifted students have high creative thinking skills, the creativity perceptions of gifted students and the differentiation of these perceptions in terms of different variables are unknown.

Although the concepts of intelligence and creativity have many important common aspects, it is necessary not to ignore the differences between them. It can be said that not every gifted person needs to be creative, and not every creative person needs to be gifted. Thus, the relationship between intelligence and creativity is worth investigating. It is considered important to investigate the creativity perceptions of gifted students as well as research intelligence and creativity.

1.1. Purpose of study

It is generally accepted that creativity is among the characteristics of gifted students. Interestingly, however, very little research has been conducted to determine the views of these students regarding their creative thinking. The use of the "self-report" scale, which is also included in the literature, will contribute to the measurement and detection efforts of gifted students' creativity, based on the fact that they will know the person best. This research seeks answers to the questions of whether gifted students have the creativity feature, to what extent they have this feature, and what kind of relationship there is between intelligence and creativity by taking the thoughts of gifted students about their creativity through the use of the self-report method.

2. Materials and Methods

2.1. Research Design

This research is a descriptive study using the survey method. Studies that aim to collect data to determine the desired characteristics of a group are called survey models (Büyüköztürk et al., 2018). Since the research aims to examine the creativity perceptions of gifted students in terms of various variables, the correlational survey model was used. The study tried to describe the existing situation in this way and examine to what extent the determined variables are related to the situation in question. The correlational survey is defined as a research model that aims to determine whether there is a change between two or more variables and, if so, the degree of this change (Karasar, 2011).

This study examined the effects of eight variables on the creativity levels of students, including age, gender, place of residence, education level of parents, the number of areas in which they felt successful, the effort to finish a job they started, the frequency of reading and the number of book types, and the relationships between these variables. The study determined the creativity levels of gifted students with the scores obtained from the "How Creative Are You" scale. It examined how the creativity scores differed according to eight variables and in which direction they were related.

2.2. Participants

The subject of the research is the gifted students in our country, Turkey. The sample of our study was selected from Istanbul, Tekirdağ, Yalova, Bursa, Balıkesir, Ankara, Konya, Eskişehir, Kayseri, Aksaray, İzmir, Manisa, Aydın, Denizli, Muğla, Afyonkarahisar, Uşak, Gaziantep, Diyarbakır, Şanlıurfa, in the 2021-2022 academic year. It consists of 241 gifted students studying at science and art centers in the provinces of Batman, Mardin, Kahramanmaraş, Bartın, Bolu, Samsun, Trabzon, Zonguldak, Tokat, Rize, Ordu, Çorum, Kastamonu, Elazığ, Erzurum, Hakkari, Malatya, Tunceli and Van. A total of 241 students were reached, 39 from the Marmara region, 37 from the Central Anatolia region, 31 from the Black Sea region, 30 from the Southeastern Anatolia region, 38 from the Aegean region, 34 from the Mediterranean region, and 32 from the Eastern Anatolia region, so that the sample could represent the gifted students studying in science and art centers in seven geographical regions of the country. 48.5% of the participants are men, and 51.5% are women. 89.2% of the participating students are between the ages of 9-13, 6.6% are between the ages of 14-18, and 4.1% are aged 18 and over. The sample was determined by the purposive sampling method because the students to be sampled were gifted students and the number of gifted students, diagnosed in our country is not very high.

2.3. Data Collection Instrument

The "How Creative Are You?" scale was used to question the self-perceptions of gifted students in terms of creativity. The scale developed by Raudsepp (1977) was adapted for Turkish by Aksoy (2004). The validity and reliability studies of the creativity scale were conducted with 174 second-year high school students in two different schools. Factor analysis revealed that the scale was unidimensional. The validity and reliability study of the scale was carried out, and the Cronbach Alpha reliability coefficient of the scale was calculated at 0.94. The "How Creative Are You?" scale consists of 40 items. The first 39 items of the scale have Likert-type scaling and are graded as "agree," "undecided," and "disagree." Necessary permissions were obtained for the use of the scale.

2.4. Ethics and procedure

Necmettin Erbakan University Ahmet Keleşoğlu Faculty of Education and Talented Education Center hosted the "VI. National Children's Research Congress (UÇAK)". There was wide participation in this congress. In this way, we had the opportunity to bring gifted students from all over Turkey together. Students were informed about the research. The data were collected through the scale delivered to the students who voluntarily decided to participate in the research in a digital environment.

2.5. Data Analysis

As a result of the measurements made by the research model, some statistical analyzes were used. Parametric tests were used because the sample size was larger than 30 (N=241) and the data showed a normal distribution. The X² (chi-square) test was used in the analysis of categorical variables. To determine whether there is a significant difference between the variables, a t-test for binary variables and an ANOVA for two or more variables were used.

3. Results

As a result of the data analysis, the interpretations of the findings related to the problem and sub-problems are included. The first sub-problem of the study sought an answer to the question, "What is the creativity level of gifted students?" The percentage values of the scores of gifted students on the "How Creative Are You?" scale are given in Table 1.

Table 1

Average of Creative Thinking Disposition Scores of Gifted Students

Creativity Group Score Range	Score Range	Number	%
Poor Creativity	Less than 10	0	0
Creative Below Middle	10-19	1	0.41
Middle	20-39	57	23
Above Average Creative	40-64	174	72
Quite Creative	65-94	9	3
Exceptionally Creative	95-116	0	0

Less than 1% of students consider themselves below average creatives. 23% of them consider themselves moderately creative, 72% above average creative, and 3% highly creative. The data can be interpreted as showing that more than half of the gifted students find themselves creative.

The second sub-problem of the study sought an answer to the question, "Do the creativity perceptions of gifted students differ significantly according to their genders?". Table 2 shows the data on the evaluation of students' creativity perceptions by gender.

Table 2

Descriptive Statistics Regarding the Gender of Students

Gender	n	x	sd	t	P
Female	124	45,35	9,918	-1,249	,213
Male	117	47,04	10,986		

T-test results by gender are given in Table 2. The participants consisted of 124 women and 117 men. The t-test ($P > 0.05$) showed that there was no significant difference between the mean scores of students finding themselves creative according to gender. This result can be interpreted as indicating that the creativity perceptions of gifted students do not differ according to their gender.

A one-way ANOVA was conducted on unrelated samples to reveal whether there is a difference in the creativity perceptions of gifted students according to their age. One-way ANOVA results are presented in Table 3.

Table 3

Analysis Results of Students by Age

Source Of Variance	Sum Of Squares	Df	Mean Square	F	Sig.
Between Groups	274,108	2	137,054		
In-group	25996,572	238	109,229	1,255	,287
Total	26270,680	240			

Table 3 shows that there is no significant difference between the average creativity scores of gifted students aged 9-13, 14-18, and 18+ ($p > .05$). This result can be interpreted as indicating that the creativity perceptions of gifted students do not differ according to age level.

A one-way ANOVA was conducted to find out whether there is a significant difference in the creativity perceptions of the gifted students based on their residence - whether they live in a city center or a district and the results are presented in Table 4.

Table 4

The Results of the Analysis of the Variable of the Level of Living of the Students

Where They Live	N	X	Sd	T	Df	P
Province	159	46,76	10,986	1,279	239	,203
District	82	45,04	9,322		188,913	

Table 4 shows that 159 of the students live in the city center, and 82 of them live in the districts. There was no significant difference between the mean scores of the creativity perception of gifted students based on place of residence (province and district) ($p > .05$). This can be interpreted as meaning that the creativity perceptions of gifted students do not differ according to the region they live in.

A one-way ANOVA was conducted to find out whether there is a significant difference between the students' creativity perceptions and the educational status of their mothers, and the result is presented in Table 5.

Table 5

Analysis Results of Students' Mothers on the Variable of Education Level

<i>Mother's Educational Status</i>	<i>Sum Of Squares</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Between Groups	683,471	170,868		
In-group	25587,210	108,420	1,576	,181
Total	26270,680	240		

Table 5 shows the ANOVA test results according to the education level of the mothers of the students. The applied test ($P > 0.05$) revealed that there was no significant difference in the creativity perceptions of the students according to the mother's education level.

A one-way ANOVA was conducted to find out whether there is a significant difference between students' creativity perceptions according to their fathers' educational status, and the result is presented in Table 6.

Table 6

Analysis Results of Students' Fathers on the Variable of Education Level

<i>Father's Education Status</i>	<i>Sum Of Squares</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Between Groups	527,059	131,765		
In-group	25743,621	109,083	1,208	,308
Total	26270,680	240		

Table 6 shows the ANOVA test results according to the education level of the fathers of the students. As a result of the applied test ($P > 0.05$), it was seen that there was no significant difference in the creativity perceptions of the students according to the education level of the father.

A one-way ANOVA was conducted to find out whether there is a significant difference in the creativity perceptions of the students according to the number of areas in which they feel successful, and the result is presented in Table 7.

Table 7

Analysis Results According to the Number of Areas in which Students Feel Successful

<i>Number Of Areas in Which They Felt Successful</i>	<i>N</i>	<i>Average</i>	<i>Standard Deviation</i>	
1	65	44,77	9,444	
2	68	44,88	10,143	
3	61	45,89	11,305	4 > 1, 2, 3
4+	47	50,36	10,353	

Table 7 shows that students who feel successful in four or more areas have a higher perception of creativity than students who feel successful in three or fewer areas.

A one-way ANOVA was conducted to find out whether there is a significant difference between their creativity perceptions and students' efforts to finish a task they started, and the result is presented in Table 5.

Table 8

Analysis Results According to the Level of Effort to Finish a Job Started by Students

Students' Efforts to Finish a Job Started	Adding Squares	Mean Square	F	Sig.
Between Groups	213,224	53,306		
In-group	26057,456	110,413	,483	,748
Total	26270,680	240		

Table 8 shows the relationship between students' perceptions of finding themselves creative and their efforts to finish a task they started. However, no significant difference was found between these two variables ($p>.05$). This result can be interpreted as meaning that the creativity of gifted students does not differ according to their effort to finish a job they started.

A one-way ANOVA was conducted to find out whether there is a significant difference between gifted students' creativity perceptions and their book reading frequency, and the result is presented in Table 5.

Table 9

Analysis Results by Students' Book Reading Frequency Level

Reading Frequency of Students	Adding Squares	Mean Square	F	Sig.
Between Groups	454,552	113,638		
In-group	25816,128	109,390	1,039	,388
Total	26270,680	240		

Table 9 shows the relationship between students' perceptions of creativity and the frequency of reading books. The difference between the students' frequency of reading books and their creativity score averages was not significant ($p>.05$). This result can be interpreted as meaning that the creativity of gifted students does not differ according to their frequency of reading books.

A one-way ANOVA was conducted to find out whether there is a significant difference between students' creativity perceptions according to the type of book they read, and the result is presented in Table 10. Table 10 shows the relationship between students' perceptions of creativity and the types of books they read. The table shows that students who read six or more types of books have a higher perception of creativity than students who read five or fewer types of books.

Table 10

Analysis Results by Level of Books Read by Students

Number Of Types of Books Read by The Student	N	Average	Standard Deviation
1	57	33,68	9,122
2	51	34,68	10,529
3	49	37,95	9,204
4	45	36,36	10,355
5	16	35,125	11,937
6	23	39,608	13,086

4. Discussion

48.5% of the participants are men, and 51.5% are women. The study concluded that the creativity of the students did not change according to their gender. Ercan-Yalman and Çepni (2021) determined that the scientific creativity of gifted students is at a moderate level, regardless of gender (Ercan-Yalman and Çepni, 2021: 866). Some studies in the literature have reported that the scientific creativity levels of gifted students differ according to gender. A study conducted on gifted students concluded that the fluency sub-dimension, which is among the sub-dimensions of scientific creativity, and the total scientific creativity score level were higher in favor of male students (Özdemir, 2013: 4). Another study conducted by Kılıç (2011) on secondary school students found that the level of scientific creativity was higher in favor of male students compared to female students (Kılıç, 2011, 58).

89.2% of the students are between the ages of 9-13, 6.6% are between the ages of 14-18 and 4.1% are 18 years old and over. It was concluded that the creativity perceptions of the students did not change according to their age. Accordingly, the creativity perceptions of gifted students aged 9-18 and over 18 years old are similar. Hu (2002) reached a different result from the results of the study in his study to determine the creativity levels of 160 secondary school students and to determine whether creativity is necessary for success in science fields. He determined that creativity skills increase with increasing age in secondary schools. Again, although not directly supporting the results of this study, Çetingöz (2002) revealed that students between the ages of 17-20 are more creative. On the other hand, Davaslıgil (2007 as cited in Bapoğlu, 2010) states that there is no definite and sharp relationship between creativity and age, which supports the results of our study. However, he added that while creativity increases rapidly in the first years of life, this increase will be slower around the 7th grade. This study, which is seen to have the highest average creativity scores of 7th-grade students, examined the creativity of students from a latitudinal perspective. To interpret these results, longitudinal studies have been suggested to researchers to contribute to the field.

The research concluded that although students' perceptions of creativity do not change according to their frequency of reading, they vary according to the types of books they read. Similar studies in the literature also state that elements that develop students' creativity, such as books and magazines, are not effective. A study conducted on secondary school students on this subject (Kılıç, 2011: 59) found that students' scientific creativity levels did not differ significantly according to their reading status and the types of books/magazines they read (science-technical, science-child, national geographic, national kids, and other magazines). On the other hand, some studies in the literature state that students' habit of reading books during their extracurricular times positively affects their creativity (Saçar, 2019). It can be thought that the main reason underlying the differences between research results is that the content of the books can be more effective in developing scientific creativity, rather than the number of books read.

The present research showed that there was no significant relationship between the education levels of the mothers of the students and their perceptions of the creativity. Some studies in the literature on this subject have concluded that there is a positive and significant relationship between the education level of mothers and the creativity levels of students, and in this context, as the education level of the mother increases, the creativity levels of the students also increase (Denis-Çeliker et al., 2015: 167). Studies on the general creativity levels of students also indicate that the high level of education of the mother is a factor that increases the general creativity level of the students (Can-Yaşar & Aral, 2011).

As a result of the research, it was seen that there was no significant difference between the creativity perceptions of the students according to the education level of their fathers. However, it is striking that the results of some studies in the literature do not show parallelism with the findings of this study. A study conducted on secondary school students found that as the education level of the fathers of the students increased, the creativity levels of the students also increased (Denis-Çeliker et al., 2015: 167). A similar study has concluded that the creativity characteristics of students whose fathers have a university education level are higher when compared to students whose fathers have an education level of primary school or high school (Can-Yaşar & Aral, 2011: 142). It can be thought that the reason for the lack of parallelism between the research findings is that the research was conducted on students living in different socio-cultural environments.

5. Conclusion

More than half of the participating gifted students consider themselves creative and above average. Students need to be aware of their potential. The research dealt with the findings of gifted students regarding their creativity according to various variables. This research, which aimed to recognize and raise awareness among students rather than diagnose them, has revealed versatile information. As a result, it was determined that the gifted students' finding themselves creative did

not differ significantly according to the gender of the students, their age, the educational status of their parents, their effort to finish a job they started, and the frequency of reading a book. According to the number of fields in which students find themselves successful, their perceptions of creativity change. Students who find themselves successful in four or more areas have higher self-creative perceptions than other students. Likewise, students who read six or more types of books read to feel more creative than other students.

Gifted children who are aware of their creative characteristics and who can put their ideas into practice are important for the development of society. Therefore, it can be suggested to redesign learning environments that will increase their awareness and make them productive 21st-century individuals by revealing their creative potential or characteristics. To increase students' self-confidence at the point of creativity, it is important to create encouraging environments in the teaching process. In this sense, it is thought that teachers in science and art centers and schools have a responsibility to allocate time for activities that will improve creativity.

References

- Aksoy, B. (2004). *Problem-based learning approach in geography teaching*. Ph.D. thesis, Gazi University, Institute of Educational Sciences. <https://tez.yok.gov.tr/>
- Allagui, B. (2022). Facilitating Creativity through Multimodal Writing: An Examination of Students' Choices and Perceptions. *Creativity. Theories–Research–Applications*, 9(1), 108-129. <https://sciendo.com/article/10.2478/ctra-2022-0006>
- Ayas, B., & Sak, U. (2014). *Objective measure of scientific creativity: Psychometric validity of the creative scientific ability test*. *Thinking Skills and Creativity*, 13, 195-205. <https://doi.org/10.1016/j.tsc.2014.06.001>
- Babaeva, J. D. and Voiskounsky, A. E. (2002). *IT- Giftedness in children and adolescents*. *Educational Technology & Society*, 5 (1): 154-162 http://chancircle.lst.ncu.edu.tw/Chanphp/Resource/paper/ETS/periodical/vol_1_2002/babaeva.html
- Bandura, A. (1977). *Self-efficacy: Toward a Unifying Theory of Behavioral Change- Psychological Review*. 34 (2): 191-215. <http://www.uky.edu/>
- Bandura, A. (1995) *Self-Efficacy in Changing Societies*, 1-46. Cambridge University Press. www.researchgate.net
- Bapoğlu, S. S. (2010). *Examining the creative and critical thinking levels of gifted and normal children*. Master Thesis, Istanbul University, Institute of Social Sciences, Istanbul. <https://tez.yok.gov.tr/>
- Barbier, K., Donche, V., & Verschueren, K. (2019). Academic (under) achievement of intellectually gifted students in the transition between primary and secondary education: An individual learner perspective. *Frontiers in Psychology*, 2533. <https://doi.org/10.3389/fpsyg.2019.02533>
- Büyüköztürk, S., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, S., & Demirel, F. (2018). Scientific research methods in education. *Ankara: Pegem Academy*. DOI 10.14527/9789944919289
- Can-Yaşar, M. ve Aral, N. (2011). *Investigation of the effects of socioeconomic level and parental education level on the creative thinking skills of six-year-old children*. *Journal of Theoretical Educational Science*, 4 (1), 137-145. <https://dergipark.org.tr/>
- Çetingöz, D. (2002). *Investigation of the Development of Creative Thinking Skills of Preschool Education Teaching Students*. Master Thesis, Dokuz Eylül University, Institute of Educational Sciences, Izmir. <http://hdl.handle.net/20.500.12397/11942>
- Cutts, N. E., & Moseley, N. (2004). *Üstün zekâlı ve yetenekli çocukların eğitimi. Education of gifted and talented students*, çev: İsmail Ersevimi, İstanbul: Özgür Yayınları.

- de Alencar, E. M. S., de Souza Fleith, D., & de Fátima Bruno-Faria, M. (2021). The Measurement of Creativity: Possibilities & Challenges. *Theory and practice of creativity measurement*, 1-20. <https://www.taylorfrancis.com/chapters/edit/10.4324/9781003238980-1/measurement-creativity-eunice-soriano-de-alencar-denise-de-souza-fleith-maria-de-f%C3%A1tima-bruno-faria>
- Deniş-Çeliker, H., Tokcan, A. & Korkubilmez, S. (2015). *Does motivation to learn science affect scientific creativity?* Journal of Mustafa Kemal University Institute of Social Sciences. Volume: 12 Issue: 30, s. 167-192 <https://dergipark.org.tr/>
- Ercan-Yalman, F. & Çepni, S. (2021). *Self-assessments of gifted students on scientific creativity and scientific problem-solving*. Centennial University Journal of the Faculty of Education, 18 (1), 852-881. <https://doi.org/10.33711/yyuefd.938725>
- Gecas, V. (2004). *Self-Agency and the Life Course*. In: Mortimer, J.T., Shanahan, M.J. (eds) *Handbook of the Life Course*. Handbooks of Sociology and Social Research. Springer, Boston, MA. https://doi.org/10.1007/978-0-306-48247-2_17
- Han, H. J., & Shim, K. C. (2019). Development of an engineering design process-based teaching and learning model for scientifically gifted students at the Science Education Institute for the Gifted in South Korea. *Asia-Pacific Science Education*, 5(1), 1-18. https://brill.com/view/journals/apse/5/1/article-p1_13.xml
- Hu, W., & Adey, P. (2002). *A Scientific Creativity Test for Secondary School Students*. *International Journal of Science Education*, 24, 389-403. <http://dx.doi.org/10.1080/09500690110098912>
- Karasar, N. (2011). *Report Preparation in Research*. Ankara: Nobel Publishing.
- Kılıç, B. (2011). *Determination of scientific creativity and scientific attitude levels of primary school eighth-grade students* (Master's thesis). Accessed from the National Thesis Center database of the Council of Higher Education <https://tez.yok.gov.tr/> (Thesis no. 287997).
- Ling, M. K. D., & Loh, S. C. (2020). Relationship of creativity and critical thinking to pattern recognition among Singapore private school students. *The Journal of Educational Research*, 113(1), 59-76. <https://www.tandfonline.com/doi/abs/10.1080/00220671.2020.1716203>
- Lunenburg, F. C. (2011). Organizational culture-performance relationships: Views of excellence and theory Z. In *National forum of educational administration and supervision journal* (Vol. 29, No. 4, pp. 1-10). [https://www.scirp.org/\(S\(i43dyn45teexjx455qlt3d2q\)\)/reference/ReferencesPapers.aspx?ReferenceID=1830875](https://www.scirp.org/(S(i43dyn45teexjx455qlt3d2q))/reference/ReferencesPapers.aspx?ReferenceID=1830875)
- Mangion, M., & Riebel, J. A. (2023). Young Creators: Perceptions of Creativity by Primary School Students in Malta. *Journal of Intelligence*, 11(3), 53. <https://www.mdpi.com/2079-3200/11/3/53>
- Özdemir, N.N. (2013). *Examination of gender differences in scientific creativity components of students applying to UYEP* (Master's thesis). Accessed from the National Thesis Center database of the Council of Higher Education <https://tez.yok.gov.tr/> (Thesis no. 322036).
- Pajares, F. (2009). Toward a positive psychology of academic motivation: The role of self-efficacy beliefs. <https://psycnet.apa.org/record/2009-10845-012>
- Raudsepp, E. (1977). 12 *Vital characteristics of the Creative Supervisor*, Supervision. Vol:45, sa,14-15.
- Renzulli, J. S. (1978). *What makes giftedness? Reexamining a definition*. Phi Delta Kappan, 60(3). <https://doi.org/10.1177/003172171109200821>

Saçar, B. (2019). *Examining the scientific creativity of secondary school students in terms of various variables* (Master's thesis). Accessed from the National Thesis Center database of the Council of Higher Education <https://tez.yok.gov.tr/> (Thesis no. 592173).

Şeker, H., Görgeç, İ., Tuncel, İ., Alçı, B., Kablan, Z., Baykara, K., ... & Turan, H. (2012). Curriculum development concepts and approaches in education. *Ankara: Memoir Publishing*.

Sternberg, R. J. (2006). *The Nature of Creativity*. *Creativity Research Journal*, 18, 87-98. https://doi.org/10.1207/s15326934crj1801_10

Sternberg, RJ, & Zhang, LF (1995). What do we mean by giftedness? A pentagonal implicit theory. *Gifted Child Quarterly*, 39 (2), 88-94. <https://doi.org/10.1177/001698629503900205>

Torrance, E. P. (1962). *Guiding Creative Talent*. *Englewood Cliffs, NJ: Prentice-Hall, Inc.* <http://dx.doi.org/10.1037/13134-000>

Treffinger Donald J. & Isaksen Scott G. (2003) *Creative Problem Solving: The History, Development, and Implications for Gifted Education and Talent Development*. *Gifted Child Quarterly* Volume 49, Issue 4 <https://doi.org/10.1177/001698620504900407>

Yi, X., Plucker, J. A., & Guo, J. (2015). Modeling influences on divergent thinking and artistic creativity. *Thinking Skills and Creativity*, 16, 62-68. <https://doi.org/10.1016/j.tsc.2015.02.002>