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Research Article

Are gifted students challenge pursuers?

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Abstract

Challenging education has always been considered a necessity and a presupposition, but it has not been considered whether gifted students also have a challenging nature. This study answers this question and examines whether gifted students have a challenging nature and seek to face the challenge. Our study was conducted with two groups of fifth- and sixth-grade students of the same schools in Istanbul, Turkey: the study group consisted of 52 gifted students, and the control group consisted of 92 undiagnosed students. In about 15 minutes, participants completed the Challenge Performance Test and the Student Information Sheet. Data obtained from participants' responses to the challenge performance test were analyzed using a t-test, and the two study and control groups were compared based on the acceptance or rejection of challenges. As expected, the analysis of participants' responses showed that gifted students in the study group performed better in accepting the challenge than students in the control group and preferred more challenging questions. After the success or failure of the students at the level they had chosen, however, the preferred behaviors in terms of challenges were different. This was thought-provoking regarding the relationship between challenge and the meaning of giftedness.

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Introduction

The image shown in Figure 1 is from one of the post-tests in my doctoral thesis. When I was conducting a quasi-experimental study, he was my student from the study's treatment group. Although he was a successful student, he just changed all the titles on the exam booklet as Beyazıt Ford Otosan guinea pigs (meaning only used for research not for improving studensts' mental, psychological and physical aspects like laboratory rats) … Wear Out the Nerves Lesson… The Monsters Eat You Unit… Dementia Test… Death Form while taking the test and did not show any work inside.

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Figure 1

An Exam Booklet Cover for the Post-test of My doctoral Thesis Scribbled on "Beyazıt Ford Otosan Guinea Pigs/ Wear Out the Nerves Lesson/The Monsters Eat You Unit/Dementia Test/ Death Form" by One of My Gifted Students (It Was Originally Written "6th Grade Science and Technology Lesson/Let's Travel and Get to Know the World of Living World/Academic Achievement Test/H4 Form" on the Paper.

The concept of differentiation might have been used in a wide range of meaning and implementation (Linn-Cohen, & Hertzog, 2007) since teachers first select instructional approaches to maximize students' capacity who show different characteristics according to the norm (Tomlinson, & Strickland, 2005). In the doctoral study, the differentiated instruction was applied in the class to ensure challenge by using depth and complexity (Çalıkoğlu & Kahveci, 2015). Although the properties of depth and complexity to maximize challenge with the aid of utility and enjoyment in that study, a few groups of students with him were uninterested in a differentiated science lesson improved according to their own academic ability. In the differentiation process, he and his friends did not let the author check their academic improvement; they basically rejected challenge. Their attitude as an inconsistent with what is expected of the gifted shaped my next research. The current study's research problem is based on the following question: "Are gifted and talented students really challenge-pursuers?"

Exposition to a challenging learning atmosphere is fundamental even in preschools (Gallagher, 2007) due to their precocious cognitive abilities. While Challenging education has always been considered a necessity and a presupposition for the gifted education, it is absent in most of the schools (Reis et al. 1993; Gentry, Gable, & Springer, P. 2000; "Top Students," 1991).

Clark (2017) has stated that gifted education generally does not have enough support in political, local, or individual settings. The basis of the mentioned lack of assistance is about the challenge. Challenge has been associated with the words of difficulty while implying growth and productivity. Ormrod (2008) uses challenge in an academic context to show the "level" that the student can be sure that he/she will succeed if he/she tries hard enough. In this case, the expression "challenge deficiency for a gifted child" refers to learning at the same pace as others, too many repetitions, not being able to reach the depth of the subject of, being in an atmosphere pretended as cultivating personal attention does not matter, considering the vomiting of information sufficient; throwing away higher-order thinking skills (Gallagher, Harradine, & Coleman, 1997).

When students who need highly intellectual educational services or activities cannot achieve them, boredom-an emotion as the result of such a situation will be inevitable. Gifted students got bored in conventional schools (Feldhusen & Kroll, 1991; Feuchter, & Preckel, 2021). From their own voices, In school is the same odd thing every day, I turn off, school is a waste of time, school is boring, I had a class that I only went to two days a week, and I still got a C" (Hymes & Bullock, 1975).

Although boredom might be seen as superficial and temporal or the emotion of leisure time, it is not an innocent feeling as expected; on the contrary, it gnaws inside. When it happens intensely or frequently, the result can be an academic failure or school dropout. As well as success-oriented misfortunes, physical and psychological health may be compelled by depression or attempting suicide (Goldberg, Eastwood, LaGuardia, & Danckert, 2011; LePera, 2011; Patterson & Pegg, 1999; Wegner & Flisher, 2009). Weissinger, Caldwell and Bandolas (1992) explain this situation given that boredom disrupts the intrinsic motivation, which is the actual thing to satisfy individual life. This is the

reason why explanations for the necessity of gifted education are bifurcated in the literature in two ways, (a) to relieve the feeling of boredom of such students and (b) to help realize themselves.

The most cited reason for the boredom of gifted children in schools in the literature is not to have enough challenge (Feldhusen & Kroll, 1991; Preckel & Frenzel, A., 2010, Kanevsky & Keighley, 2003). As not parallel with this, there is no clear statement defending "challenge-pursuing" is one of the common characteristics of the gifted and talented students. However, those amounts of research mentioned above fairly strengthen the opinion that gifted students must have been natural challenge-seekers. From the side of the author's personal experience, a few groups of gifted students who show no taking fun and challenging activities in science class develop a legitimate doubt about the challenge-oriented behaviors of gifted children.

Problem of Study

In this study, to be able to answer the question of "Are gifted and talented students really challenge-pursuers?", a game like test was conducted for students both diagnosed as gifted and non-diagnosed. According their performances, three research questions are as follows:

- Are there differences in the preferences of level between the two groups?
- Are there differences in the success between the two groups?
- Are there differences in the failure between the two groups?

Method

Research Model

In order to answer the question of "are gifted and talented students really challenge-pursuers?" more effectively and directly, comparative study as a research model is adopted.

Participants

Our study was conducted with two groups of fifth- and sixth-grade students of the same schools in Istanbul, Turkey: the study group consisted of 52 gifted students, and the control group consisted of 92 undiagnosed students.

Data Collection Tools

Challenge Performance Test: In this test, students' mission is to find the correct word by realigning letters. Questions are mixed words from students' own lives. Students had two minutes to form a correct word using letters. The cards were then collected, and students could increase or decrease the test level. This process was repeated three times, and there were seven different levels for each iteration. The easiest word comprised of three letters and the hardest word comprised of nine letters (see Figure 2). In total, 42 words were used for 5th and 6th-grade students (Calikoglu, 2019). When time is up, only the game player knows if he succeeded or failed, results are not announced in the class.

Figure 2

Two Sample Cards of the Play

Data Analysis

Data was scores of students' Challenge Performance Test implemented in the class. There were two scoring systems for this activity: If the student succeeded in the selected level, he/she would receive a score equal to twice (2 x level) the selected level. In case of failure, the student received only a score equal to the preferred level (1 x level). Based on scores students got, t-test was performed on SPSS program in order to compare two groups of diagnosed as gifted and on-diagnosed.

Procedure

In about 15 minutes, participants completed the Challenge-Performance Test and the Student Information Sheet. Data obtained from participants' responses to the challenge performance test were analyzed using a t-test, and the two study and control groups were compared based on the acceptance or rejection of challenges.

For this test and requirements, such observations of sub-research questions were considered:

- Have students diagnosed as gifted significantly higher scores on Challenge-Performance Test than average students who have high grades in school?
- Have gifted students significantly differed in their preferences from students who are undiagnosed?
- Have gifted students significantly differed in their success situations from students who are undiagnosed?
- Have gifted students significantly differed in their preferences when they failed?
- Have gifted students significantly differed in their preferences when they succeeded?
- Do two groups differ in their preference of levels when they succeed or fail in the end? Which one of these behaviors is taken by students?
    a. chooses a higher level than a level which students became successful
    b. chooses the same level which students already became successful
    c. chooses a lower level than a level which students became successful
    d. chooses a higher level than a level which students fail
    e. chooses the same level which students fail
    f. chooses lower level than a level which students fail

Results

Scores on Challenge-Performance Test

There was statistically significant difference in the overall scores for undiagnosed students (M=17.42, SD=7.05) and diagnosed as gifted students (M=20.30, SD=7.19) who both received Challenge Performance Test; $t_{(142)}$ =3.975, p=.000; See Figure 3).

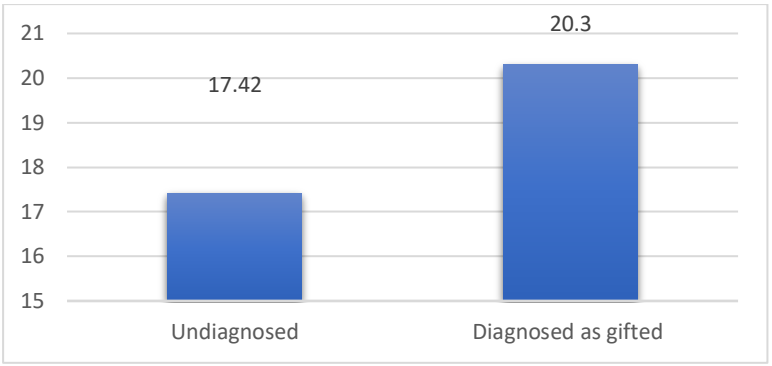

Figure 3

Differences of Preferences for Level between Diagnosed as Gifted/Talented and Undiagnosed

Preferences for Challenge-Performance Test

2.a. For the first preference

There was statistically significant difference in the first preference of levels for undiagnosed students (M=3.83, SD=1.46) and diagnosed as gifted students (M=5.27, SD=1.27) who both received Challenge Performance Test; $t_{(142)}$=, p =.000; (See Figure 4).

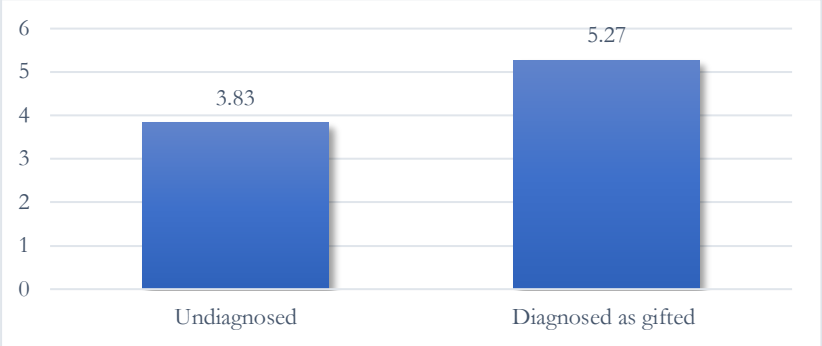

Figure 4

Differences of First Preferences for Level between Diagnosed as Gifted/Talented and Undiagnosed

2.b. For the second preference

There was statistically significant difference in the second preference of levels for undiagnosed students (M=3.83, SD=1.99) and diagnosed as gifted students (M=5.07, SD=1.34) who both received Challenge Performance Test; $t_{(142)}$=, p = .000 (See Figure 5).

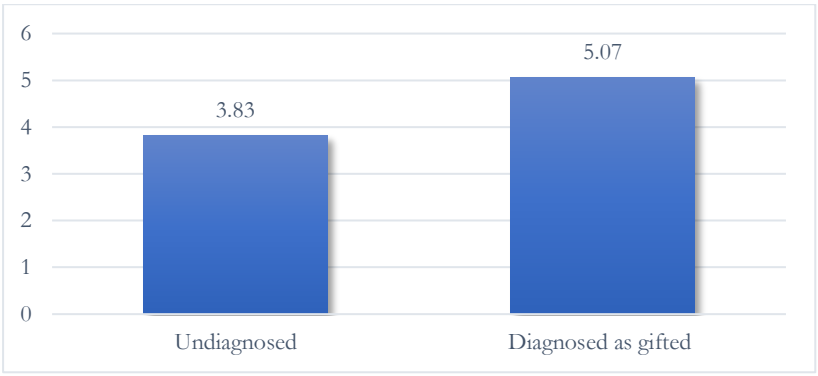

Figure 5

Differences of Second Preferences for Level between Diagnosed as Gifted/Talented and Undiagnosed

Success for the Level Students Preferred

3.a. For the first success

There was not statistically significant difference in the first success for undiagnosed students (M=0.54, SD=0.5) and diagnosed as gifted students (M=0.48, SD=0.5) who both received Challenge Performance Test; $t_{(142)}$ =, p >.05 (See Figure 6).

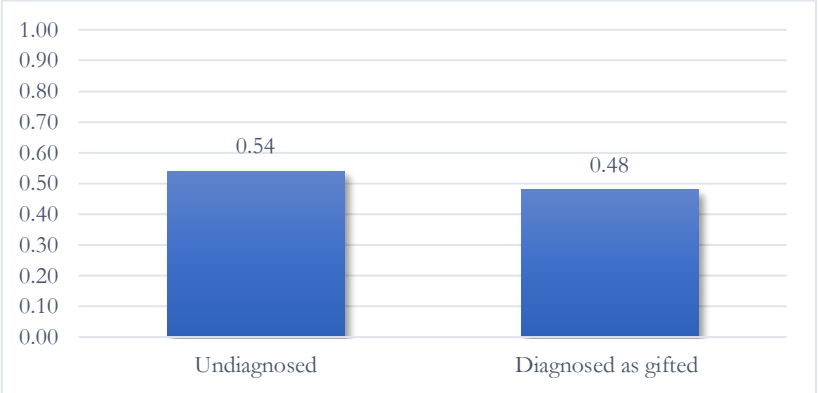

Figure 6

Differences of First Success Between Diagnosed as Gifted/Talented and Undiagnosed

3.b. For the second success

There was not statistically significant difference in the second success for undiagnosed students (M=0.56, SD=0.5) and diagnosed as gifted students (M=0.48, SD=0.50) who both received Challenge Performance Test; $t_{(142)}$ =, p > .05 (See Figure 7).

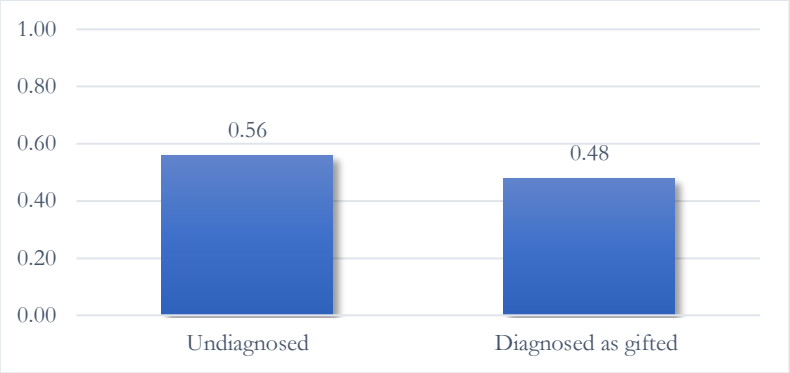

Figure 7

Differences of Second Success between Diagnosed as Gifted/Talented and Undiagnosed

3.c. For the third success

There was not statistically significant difference in the third success for undiagnosed students (M=0.63, SD=0.48) and diagnosed as gifted students (M=0.57, SD=0.5) who both received Challenge Performance Test; $t^{(142)}$ =, p > .05 (See Figure 8).

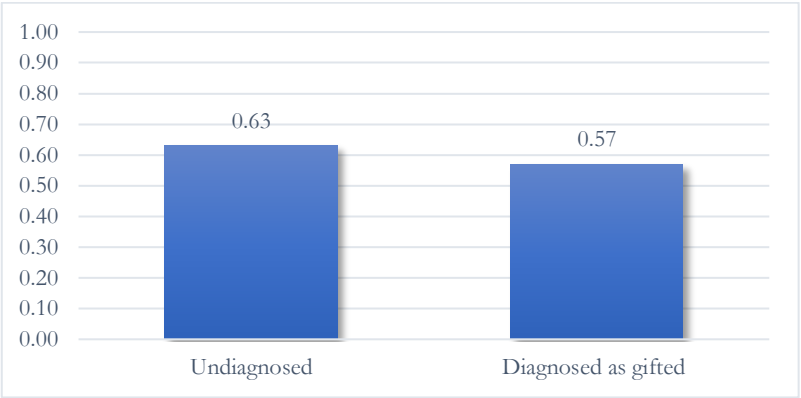

Figure 8

Differences of Third Success between Diagnosed as Gifted/Talented and Undiagnosed

Choices of Behaviors When Students Succeeded

4.a. Preference of Behavior for the Second Activity

There was statistically significant difference in the choices of behavior for the second activity when students succeeded at the level which they previously chose in favor of students diagnosed as gifted students; X2= 8.62, p = .01 (See Figure 9).

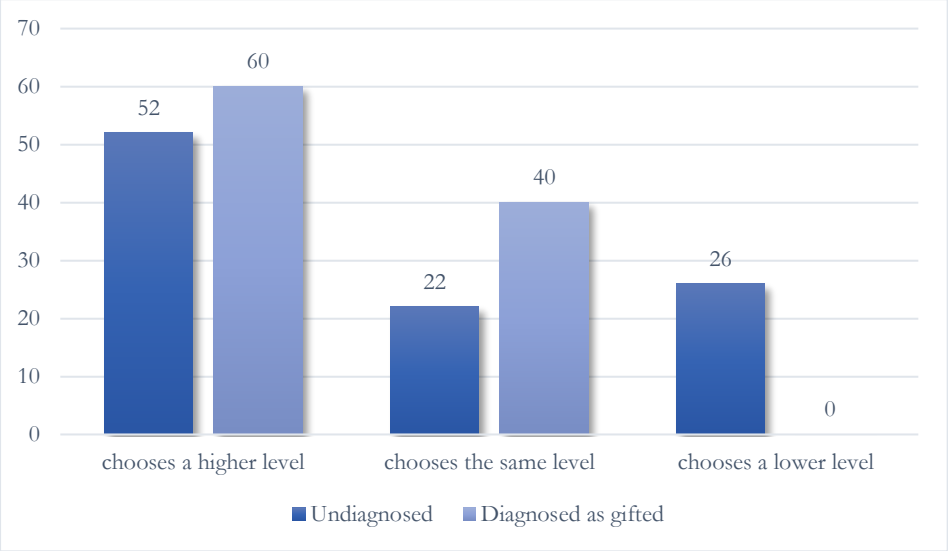

Figure 9

Differences of the Preferences After First Success between Diagnosed as Gifted/Talented and Undiagnosed

4.b. Preference of Behavior for the Third Activity

There was not statistically significant difference in the preference of behavior for the third activity when students succeeded at the level which they previously chose between students undiagnosed and diagnosed as gifted; X^2= 4.137, p>.05 (See Figure 10).

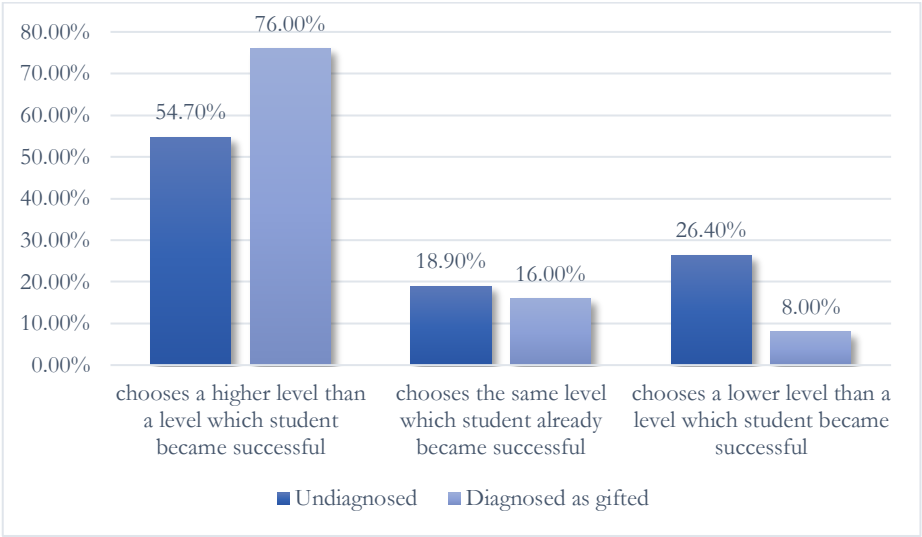

Figure 10

Differences of the Preferences After Second Success between Diagnosed as Gifted/Talented and Undiagnosed

Choices of Behaviors When Students Failed

5.a. Preference of Behavior for the Second Activity

There was not statistically significant difference in the preference of behavior for the second activity when students failed at the level which they previously chose between students undiagnosed and diagnosed as gifted; X^2= 0.412, p > .05 (See Figure 11).

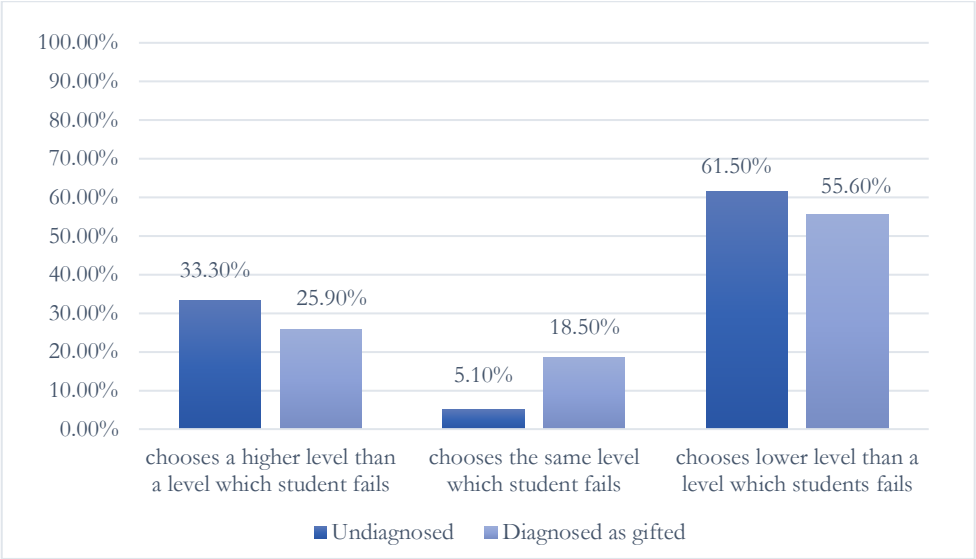

Figure 11

Differences of the Preferences After First Failure between Diagnosed as Gifted/Talented and Undiagnosed

5.b. Preference of Behavior for the Third Activity

There was not statistically significant difference in the preference of behavior for the third activity when students failed at the level which they previously chose between students undiagnosed and diagnosed as gifted; X^2= 3.083, p>.05; See Figure 12).

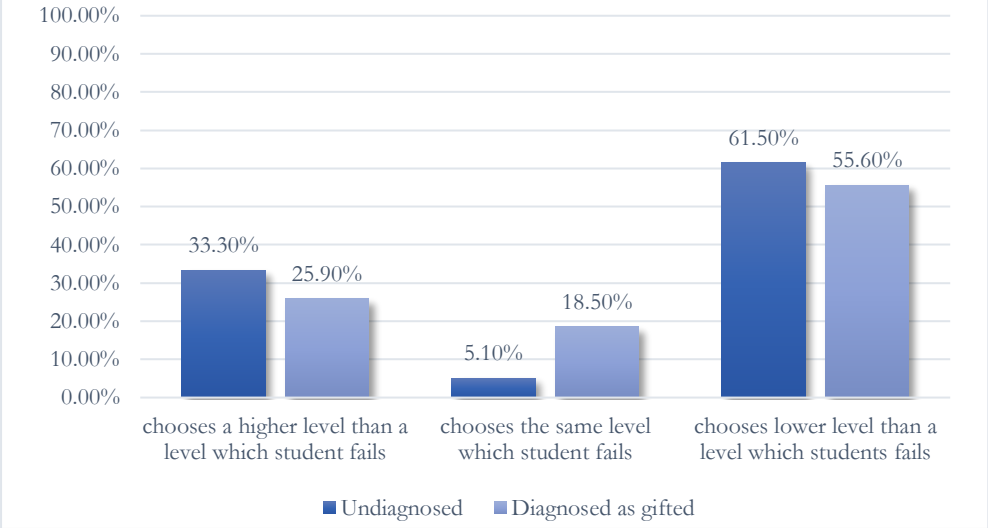

Figure 12.

Differences of the Preferences After Second Failure between Diagnosed as Gifted/Talented and Undiagnosed

Difference in the Differences of Preferences

6.a. While passing from the first to the second activity

While passing from the first to the second activity, it has observed that there was not statistically significant difference in the differences of level choices when students failed at the first activity (t=0.20; p> .05; See Figure 13).

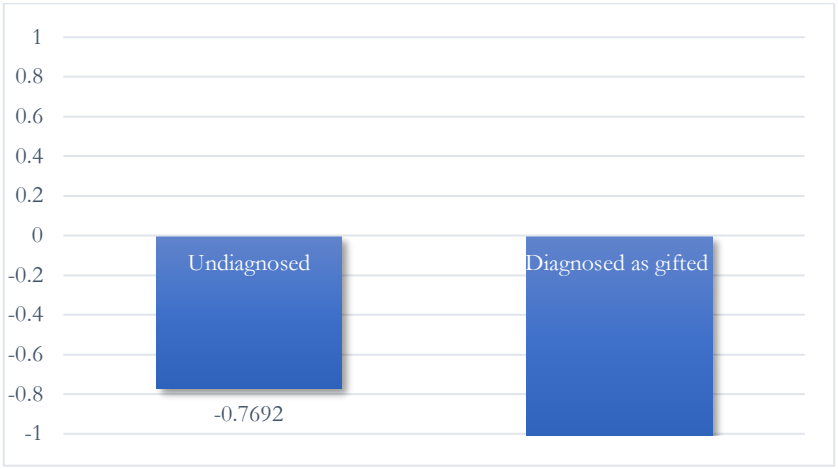

Figure 13

Differences of the Level of Preferences After first Failure between Diagnosed as Gifted/Talented and Undiagnosed

Usually, students who are undiagnosed as gifted choose one degree lower (Percentage $_{undiagnosed}$ 26.2 %; Percentage $_{gifted}$=33.3%) than what they previously choose when they were not successful with the first activity (See Figure 14).

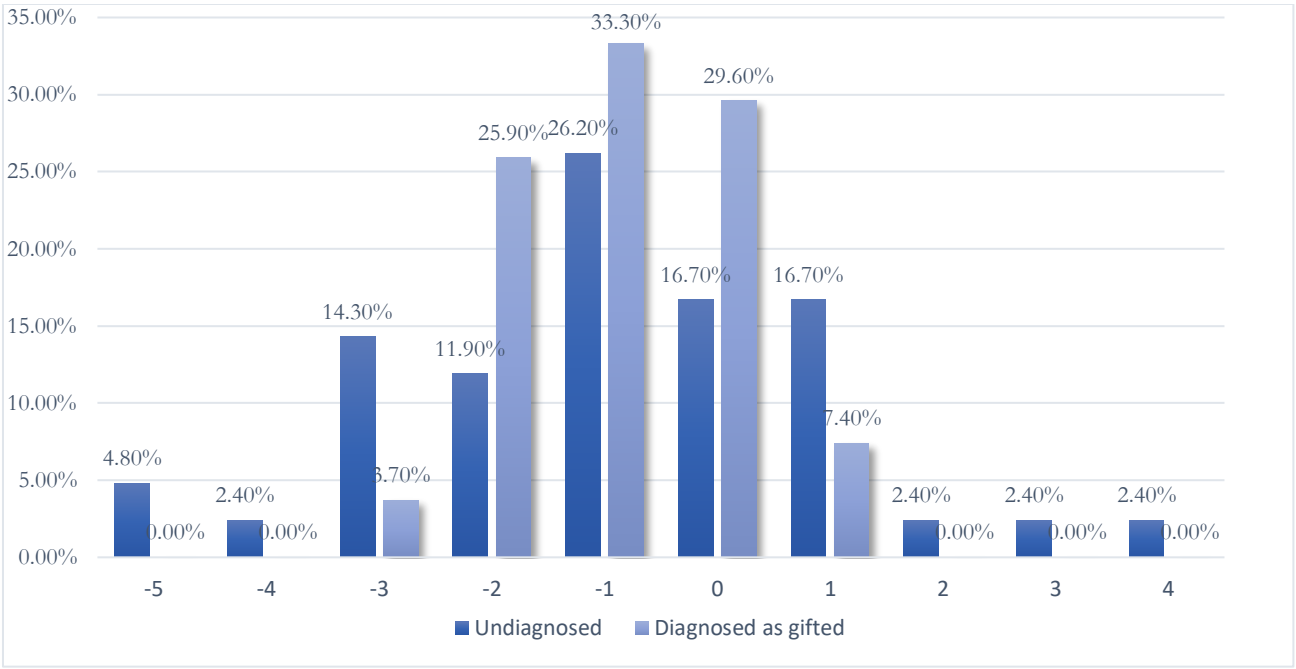

Figure 14

Frequencies of the Level of Preferences After First Failure for Diagnosed as Gifted/Talented and Undiagnosed

6.a. While passing from the second to the third activity

While passing from the second to the third activity, it has observed that there was not statistically significant difference in the differences of level choices when students failed at the second activity (t=0.60; p>.05; See Figure 15)

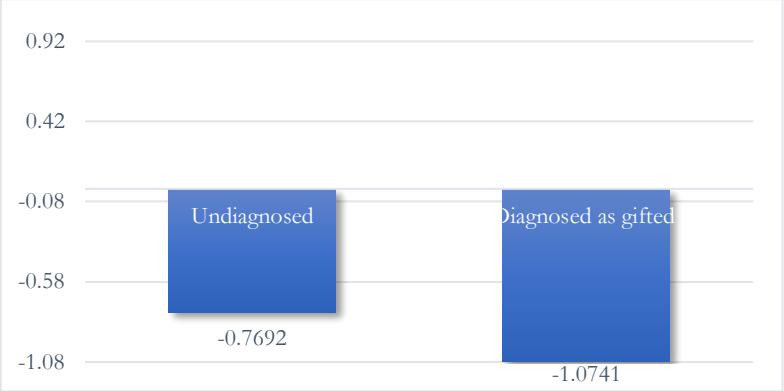

Figure 15

Differences of the Level of Preferences After Second Failure between Diagnosed as Gifted/Talented and Undiagnosed

When we observed the differences of the preference levels between the second and the third activity, while students who are undiagnosed as gifted mostly choose one degree lower (Percentage $_{undiagnosed}$ 30.8 %) than what they previously choose when they were not successful with the second activity, students who are diagnosed as gifted mostly choose the same level as the previous activity (Percentage $_{gifted}$=37%; See Figure 16).

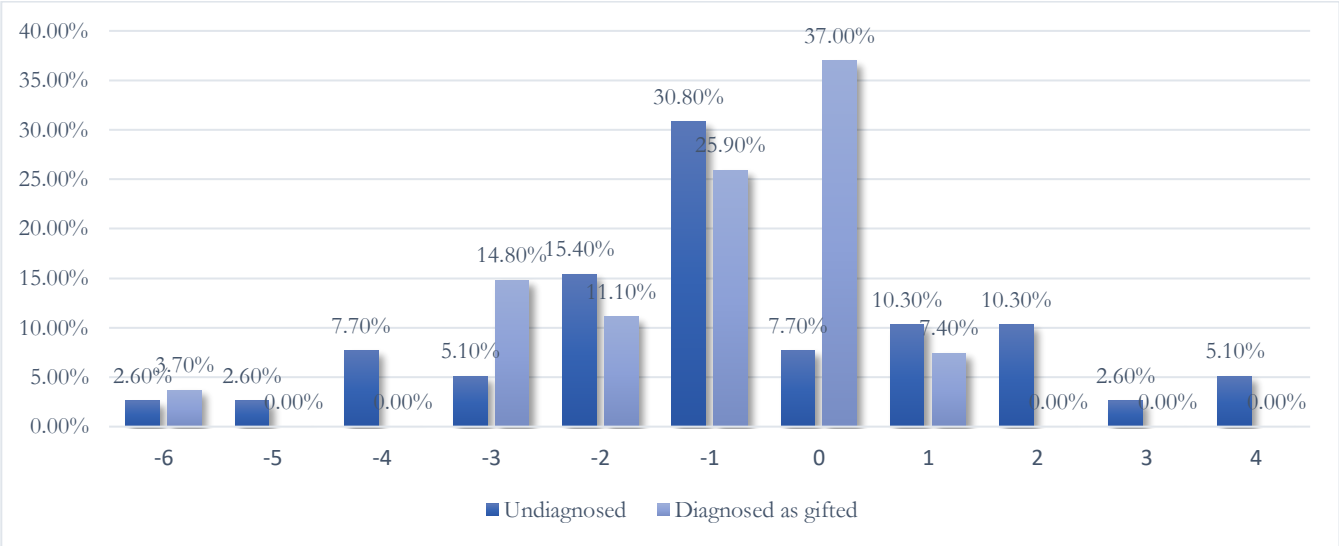

Figure 16

Frequencies of the Level of Preferences After second Failure for Diagnosed as Gifted/Talented and Undiagnosed

Discussion and Conclusion

Students diagnosed as gifted prefer more challenging activities than undiagnosed students. This result itself still does not mean directly they are "challenge-pursuers," just because those participants in this study choose a level in accordance with their ability. The present study also showed that the two groups both succeeded according to their preference. It has clearly been observed that gifted students' challenge-oriented behaviors were rather seemed to be situation-specific. When they succeed, they do not go lower or maintain their level; on the contrary, they chose a higher level. Nevertheless, when they did not succeed, there were dichotomous results. Either they went lower level as students who are undiagnosed, or they maintained their levels as opposed to students who are not diagnosed as gifted.

Another interesting finding, the remaining choice, "choosing higher levels when failed," is made by students who are not diagnosed as gifted, not by gifted and talented.

As shown in Table 1, which summarizes the current study with a comparative perspective, there are important things to consider. Here, the most important issue is that gifted students who experience failure generally prefer lower levels, while undiagnosed students prefer the same and lower levels as well as higher levels when they fail.

Table 1

Summary of the Current Study with a Comparative Perspective

	Gifted	Undiagnosed
Success	▪	
Preference	▪	
Success according to preference		
Behavior of preference after became successful		
Behavior of preference after failed		▪

- ▪ This is the sign if the two groups show differences according to each other. The difference is used in favor of whichever side. The sign was not put if two groups showed similar behaviors.

For making sense of the results of this study, concepts of risk-taking and avoiding failure should be discussed. As seen in challenge-oriented behaviors of gifted children, there is no common conclusive statement about the relationship between risk taking and giftedness in the literature. Although studies about risk taking behaviors largely focus on the harmful potential side (Humphreys, Lee & Tottenham, 2013), a neutral expression of risk taking behavior can be defined as the students' courage and unwillingness to quarrel against difficulties and their learning situations (Korkmaz, 2002). From the positive side, risk taking adds an explorative feature to the individual is undeniable. This is actually what makes risk taking valuable; enhancing new learning. For this experiential study, choosing a lower level can make students successful, but for sure, it does not lead to learning.

These statements below may give a clue for the behavior that gifted students are not playing for higher level when they fail:

- *Preferring to stay in the comfort zone*. Students might not want to be bothered while solving harder questions. The lack of challenge in our schools may make students get used to being successful without effort. For undiagnosed children, the system does not work that way. They are unlikely to experience effortless higher grades. They may have learned that there is no gain without effort.
- *Being accustomed to staying successful with less effort*. Risk taking behavior may not be developed because the requirements of being successful in primary school are lower than their ability level requirements. Thus, they might not have had any chance to be able to enter risk-taking and uncomfortable areas.
- *Being under the influence of external factors.* In the experiment, students are acknowledged to be on their own work, keep what they have done on the paper, show no interest to students near you. The researcher did not let anybody know others' situations. No matter how much this effect is tried to be prevented, they may show off their success to their friends, revealing it by bodily behaviors or using verbal cues.
- *Being unable to cope with stress.* As a consensus reached by brain-behavior researchers, meta-analysis studies have shown that stress modifies decision-making mechanisms (Starcke & Brand, 2012). As a striking example, the stunning results of Pabst, Brand, & Wolf's (2013) study indicate that resting time after stress makes a big difference in decision-making quality. Challenge Performance Test consists of the words we use in our daily lives where students can find fun, and the test was planned to create a flow situation by immersing the students in the game. However, when failed, stress might show up when their quick decision could be affected by it.
- *Not addressing the values template*. Risk taking starts with choosing an activity that allures the person. Simply, a man cannot take risks in everything he thinks. Even if a gifted and talented student finds the activity challenging, he or she may not see it as an activity worth taking the risk.
- *Being extrinsically motivated*. If gifted and talented students are extrinsically motivated, they might lose their interest very easily because they were not graded for the activity they finished. Neither failure nor success was reinforced.
- *The other side of the picture*. Another side of the picture can be explained as follows. If typically developing students have the courage to choose a higher level when they lose, is it risk-taking behavior or metacognitive failure? Here is the part of this study that has not yet been answered due to the limited data in our hands. Suppose that students are undiagnosed taking risks not because they make the right decision but because they did without cognitive control. Is it possible to reach a conclusion that normalizes gifted and talented students avoiding behavior when they fail and interpreted as very precautionary behavior?

Recommendations

Recommendations for Further Research

The relationship between boredom, risk-taking and challenge deserves deeper attention. With this study, it can be addressed the need to produce more versatile frameworks linking challenge and boredom in gifted children. In order to be able to understand more precisely, this research should be conducted with more gifted and talented students and using scales or other qualitative methods related to perfectionism and risk-taking behavior.

Recommendations for Applicants

While challenge is the first necessity in gifted education, there are three essential considerations to put challenge into use. Firstly, in class with mixed type students, challenge might arouse students who are undiagnosed as gifted. Secondly, students who are not diagnosed as gifted may not just getting exited at first, but also pursue on taking challenge. Schools are places where not only the skills are gained but also the responsibilities are learned or reinforced. Understanding students as challenge-orientedness rather than highly or mildly intelligent can be very helpful in developing their potentials. Thirdly, for gifted students who might show low degree of profile for taking challenging action, schools should provide special preventive services.

Limitation of the Study

Research like this should be remodeled in ways which reveal concisely whys of the results. When the results were surprising or unexpected as in this study, they remained as possible explanations. Another limitation was the small-scaleness. Generalizability became questionable unless the study is practiced at ages in different ways, at different places.

Acknowledgment

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Biodata of the Author

Burcu Seher ÇALIKOĞLU graduated from Boğaziçi University Science Education Department with an additional diploma in "Elementary Mathematics Education Department" in 2006. She studied with gifted children for her both master and doctoral dissertation, In July 2015, she founded the Thinking Education Center in order to provide high-level thinking skills to gifted and talented students or those who want to develop their potential, and to contribute to the dissemination of high-level thinking culture. While working in Thinking Education Center, deeply focuses on "challenge-oriented behaviors", "false-beliefs", "argumentation", "Socratic dialogue", "dialogue of full-conflict" and "paradoxes" in her education. After leaving the center and passing to Izmir Democracy University, directed her concentration to research on these subjects. **Affiliation:** İzmir Democracy University Education Faculty, Department of Special Education, Turkiye **E-mail** :burcu.calikoglu@idu.edu.tr, **ORCID:** 0000-0002-4085-8330

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