Examination of Special Talent Students' Immediate Emotions Regarding Music with Different Emotions

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Abstract
Gifted individuals are more advanced than their peers in cognitive, affective, psychomotor, or creative areas. This study aimed to find an answer to how gifted students' immediate emotional states change by means of music containing different emotions. The sample of the study consisted of 122 students studying at Adana BİLSEM. Their moods were measured after listening to different pieces of music. The findings showed that there was a significant difference between the emotions that the students felt with different music, they felt more positive emotions, and the girls felt the emotion much more than the boys. The results of this study can be used to better understand gifted students and to develop musical activities to help them manage their emotions.
Keywords: Musical mood, Gifted Students, Asynchronous Development, Different Emotions, Talent

Introduction

The Columbus Group defines giftedness as a form of asynchronous development in which high-level cognitive abilities and intense emotions combine to create unusual experiences (Silverman, 1997). Music can be a helpful tool in expressing the intensity experienced.

Since the mental process is a vital point in gifted children, music is a helpful tool in this process (Sandu, 2019). Gabrielsson (2001) has argued that music helps individuals manage their emotions and is divided into two perceived emotions and felt emotions. In his study investigating the relationship between these two situations, Schubert (2013) has suggested that both emotions often overlap in many cases. For example, sad music is often assumed to cause listeners to feel sadness, which explains a positive relationship between perceived and felt emotions. Music strengthens emotions as well as provokes them (Walker-Andrews, 1997). For example, while music helps to illuminate thoughts and make sense of emotions, it affects the clarity of experience by shaping different emotions (Ismail & Anuar, 2020).

Some scholars have demonstrated that music elicits specific emotional reactions from the listeners (Juslin et al., 2011; Juslin, 2011; Juslin, 2012; Juslin & Sloboda, 2010). Music is also used for manipulation, therapeutic purposes, and to calm down in stress-depression situations (Chamorro-Premuzic & Furnham, 2007;

Chin & Rickard, 2013). Most studies have shown that one of the most common reasons people listen to music is for mood improvement and emotional regulation (Juslin & Sloboda, 2010; Rentfrow & Gosling, 2003; Saarikallio & Erkkila, 2007; Sakka & Juslin, 2018; Schäfer et al., 2013). Juslin and Slobada (2011) have argued that when listening to music, people try to understand and perceive the feeling it creates. The person acts according to the emotions that the music leaves on him. Music affects the consciousness with emotions such as sadness, happiness, liking, hatred (Akçay & Çoruk, 2012).

Adaptive functions of emotions have been studied as the main factor affecting cognition and behavior (Schachter & Singer, 1962). From this point of view, it is possible to define emotions as the processing of general arousal by cognitive processes under the influence of a stimulus (Plutchik, 1980). Emotions dominate coding, storing, and recalling information, as they work with the cognitive and emotional processes (Coşkun & Gültepe, 2013). Studies using auditory stimuli consisting of harmonious and incompatible musical works show that people pay more attention to stimuli that have an apparent emotional effect (Sammler et al., 2007). The Mozart Effect is a concept to investigate the relationship between music and cognitive dissonance (Duke, 2000; Thompson et al., 2001; Schellenberg, 2006). "Allegro Con Spirito" (KV 448), the first part of Mozart's Sonata in D major composed of two pianos, is a temporary increase in spatial intelligence in standard tests after listening. Although many researchers have tested this situation repeatedly since Rauscher first observed this situation (Rauscher et al., 1993), there are also studies in which the Mozart Effect is not accepted due to the inability to obtain the same result (Pietschnig et al., 2010; Steele et al., 1999). Although it is controversial in studies whether the Mozart Effect affects essential cognitive functions in music, it positively affects mood in these studies (Perlovsky et al., 2013). Considering the relationship between mood and creativity, positive and negative moods affect creativity (Akinola & Mendes, 2008). A positive mood created from a musical piece (e.g., Bach music) increases creativity (Isen, 2000), while a negative mood created by adding devil spacing to the same piece is an inhibiting factor in creativity (Öğüt, 2014). Individuals may experience different mood intensities depending on the types of music given depending on their momentary feelings. Recently, some studies have taken into account the effect of instant mood (Öğüt, 2014; Gültepe & Coşkun, 2016). It has been noted that gifted children interpret the feelings they experience from the music they hear, though there are few studies in the literature that indicate this. In light of these discussions, it is necessary to illuminate the instant moods of gifted children about the different music they listen to.

In Turkey, the institutions that provide education to gifted children are Science and Art Centers. These institutions provide education to children who are entitled to education as a result of intelligence and aptitude tests in the areas they are talented in outside of the hours they study at school. Education in these institutions is provided in 3 areas. These are General Talent (such as Science, Mathematics, Social Sciences), Music and Painting.

Purpose of the Research

In line with the mood paradigm, this study examines the instant moods, music genres, and post-music moods of gifted students. For this purpose, the research questions were designed as follows:

1. Is there a relationship between the instant moods of the music containing different emotions and the types of moods played to the gifted students?
2. Is there a significant difference between the momentary moods of gifted students and their mood types?
3. Does the instantaneous mood of the gifted students related to the music containing different emotions have an effect on the emotional intensity?
4. Is there a relationship between the momentary moods of gifted students about music with different emotions and their genders?
5. Is there a relationship between the emotional intensity of the momentary moods of the music containing different emotions for gifted students and their gender?

Methodology

Methods

This study used a relational screening design from the quantitative research method. Relational

screening design is a non-experimental research study designed to describe and predict relationships between variables (Christensen et al., 2015). The relational screening design, also known as the correlational research design, is applied to help explain important phenomena by defining the relationships between variables or to predict possible outcomes (Fraenkel et al., 2012).

Study Group

Determined by the purposive sampling method, Students receiving education in the field of general talent were included in the study in Adana Science and Art Center. The sample group consisted of 130 students studying at Adana Science and Art Center in the Support Education program. Eight students wanted to be only spectators in the activity sessions. The age range of the participants was between 8-11, with an average of 9.5 years. The demographic characteristics of the sample group are illustrated in Table 1. The sample group included 54.9% (67) female students and 45.1% (55) male students.

Table 1 Demographic Characteristics of the Study Group

Gender	N	%
Female	67	54.9
Male	55	45.1
Total	122	100

Data Collection Tools

Neutralization and Word Count: The participants did read the paragraph they saw in 2 minutes and write it at the bottom of the text as quickly as possible to measure their writing speed and to ensure that they were in an equally neutral mood when they started the research and also to detect a plausible confounding effect. The participants received the instruction that there was no such thing as right or wrong in the writing process, and the more they write, the better. The text included expressions about daily shopping and routine work in the text (Gültepe & Coşkun, 2016).

Neutralization Control and Mood Measurement: After the neutralization process was applied with the writing speed test, post-neutralization mood measurement (neutralization control) was performed to measure the participants' mood level and to measure the change in the mood level after manipulation. In the form that the participants were asked to fill in, the first four questions were prepared as filling materials to include the information on "gender, age, how many siblings you had, and the last book you read". In the item related to neutralization control, the participants answered the question "How do you feel today?" with a scale "(1) Very bad, (2) Bad, (3) Fair, (4) Good, (5) Excellent".

Musical Mood State Test: This test was developed to reveal the children's ability to distinguish music that expresses their anxious, happy, sad, fear, neutral and calm emotions. When choosing the music that expresses these feelings, the number of references to these works in the literature or the studies was taken into consideration.

Table 2 List of Selected Musical Works

Selected Musics	Mood Expressed	Reference
"Concerto for Two Pianos, Percussion, and Orchestra" B. Bartok	Tense	Cited in Okay and Ece (2019)
"Allegro" from Spring from The Four Seasons, A. Vivaldi	Happy	Cited in Okay and Ece (2019); Eich et al. (1994)
"Adagio in G minor for Strings and Orchestra", T. G. Albinoni	Sad	Cited in Okay and Ece (2019); Er et al. (2008); Cited in Eich et al. (1994)
Modest Mussorgsky, Night on Bare Mountain	Fear	Cited in Okay and Ece (2019); Balch et al. (1999)
Claude Debussy Dialogue of wind and sea	Neutral	Cited in Karşıcı (2007)
"Andante BWV 1056" J. S. Bach	Calm	Cited in Balch et al. (1999), Cited in Lingham and Theorell (2009)

Six samples of musical works in which emotions are clearly represented are determined, and they constitute the questions of the test. While determining the sections to be used in these works, the opinions

of 3 lecturers from the music education department and one lecturer from the psychology department were taken, and a consensus was reached. A marking inventory called 'My Emotions' was created. In this inventory, there was a box for expressions of each emotion and for each music, which can be rated from 1 to 10. The participants were asked to rate the degree of emotion they felt.

Process

Since the students participating in the research had difficulty naming their feelings due to their small age group, a 40-minute activity was planned and implemented for naming emotions before the application. They were allowed to brainstorm on what art means, why an artist produces work, and what emotions they feel by looking at some works of art (paintings, sculpture photographs, ballet performances). This situation made the children aware of their emotions. Two experts in the field were consulted for the images and videos used in the event. After a 15-minute break from the activity, a musical mood study was carried out. The data were collected in 13 sessions for approximately three weeks.

In the application, neutralization work was done for the students to get rid of negative emotions. Afterwards, certain sections (approximately 90 seconds) of 6 music pieces were played one by one. Students closed their eyes while listening to the music and the environment was kept quiet. There were no visuals, videos, etc. in the classroom environment that would negatively affect their attention. Students were asked to mark the emotion that the music evoked in them on the forms distributed to them. They were also asked to score in the range of 0-10 points to express the intensity of emotion evoked by the music they listened to.

Findings

Neutralization control

First of all, it was checked whether neutralization had the same effect in different groups, in which people had to write the paragraph they saw in the space below in 2 minutes to neutralize their emotional state at the beginning of the experiment. The positive mood of the participants was measured with the items in which the participants reported themselves on the axis of "Very Bad, Bad, Medium, Good, Excellent". 93.4% of the students had a moderate or higher mood in the frequency test, indicating that the neutralization task worked as expected. The results were given in Table 3.

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Table 3 Means of Positivity after Neutralization of Mood Conditions

Mood	n	%
Very bad	3	2.5
Bad	5	4.1
Medium	30	24.6
Good	53	43.4
Excellent	31	25.4
Total	122	100

Mood Findings

The relationship between the instantaneous moods of the music containing different emotions of gifted students and the type of emotion of the students was examined by looking at the correlation table. While 43.4% (n = 53) of the students felt fear in the music that gives the feeling of fear, 45.1% (n = 55) stated that they felt the feeling of uneasiness. When listening to music that gives the feeling of anxiety, 34.4% (n = 42) of the students felt uneasy again, while 28.7% (n = 35) reported that they felt fear. When the music that gives the feeling of sadness was played to the students, 47.5% (n = 58) stated that they felt sad, and 27.9% (n = 34) felt calm. 50.0% (n = 61) of them reported being happy, and 36.1% (n = 44) felt calm when the music that made students feel happy was listened to. When listening to music that gives a feeling of calm, 54.9% (n = 67)

reported feeling calm, while 20.5% (n = 25) said they felt happy. 51.6% (n = 63) reported feeling fear, and 39.3% (n = 48) felt uneasy when students listened to music that gave them a neutral feeling (Table 4).

The chi-square analysis showed a significant relationship between the instantaneous moods of the music containing different emotions and type of emotion felt (p< .0001) (Table 5).

Table 4 Percentages for Types of Music Listened to by Gifted Children and Types of Moods

			Mood types						
			Fear	**Tense**	**Sad**	**Happy**	**Calm**	**Neutral**	**Total**
Music Types	Fear	%	43.4	45.1	0.0	9.0	0.8	1.6	100
		N	53	55	0	11	1	2	122
	Tense	%	28.7	34.4	13.9	2.5	2.5	18.0	100
		N	35	42	17	3	3	22	122
	Sad	%	0.8	2.5	47.5	10.7	27.9	10.7	100
		N	1	3	58	13	34	13	122
	Happy	%	1.6	3.3	2.5	50.0	36.1	6.6	100
		N	2	4	3	61	44	8	122
	Calm	%	0.0	0.8	17.2	20.5	54.9	6.6	100
		N	0	1	21	25	67	8	122
	Neutral	%	51.6	39.3	0.8	2.5	2.5	3.3	100
		N	63	48	1	3	3	4	122

Table 5 Chi-Square Analysis Results between Mood Types and Instant Moods of Specially Talented Children of Music Containing Different Emotions

Variables	n	sd	Chi-square $\chi 2$	p
Different Emotional Music and Mood Type	122	25	730.456	0.0001

Table 6 Correlation Test Results of Instant Mood and Emotion Intensity of Gifted Students

Variable	Instant Mood	Emotion Intensity
Instant Mood	-	.083
Emotion Intensity	.083	-
Mean	3.85	7.18
SD	0.92	2.30
Minimum	1.00	1.00
Maximum	5.00	10.00

**p<.001

For the analysis of the other research question, the Pearson Correlation test was conducted to determine the relationship between the instant emotional state of the gifted students and the emotional intensity of the music containing different emotions. As can be seen in Table 6, there was a positive, low-level significant relationship between the mood that gifted students feel instantly (r=.083) and the intensity of emotion after musical listening.

In the COVARIANCE analysis, the instant mood was considered as a covariate. This analysis showed significant difference between the emotional intensity desired to be given in the music listened to and the instantaneous moods of the music containing different emotions (p<.05, F=5.050, Table 7). Those with a more positive immediate mood experience had greater emotional intensity, F(1, 116) = 5.25, p = .02, eta square = .07. Also, the effect of music type on emotional intensity was statistically significant, F(5, 116) = 25.852, p =.0001, eta square = .34.

Findings showed a low-level significant difference between the instantaneous moods of the music containing different emotions and the emotional intensity of the gifted students (p<.05, Table 8). The Post Hoc Test (the Benferroni test) showed that the students felt calm (M=7.59), happy (M=7.51), fear (M=7.47), tense (M=6.94), sad (M=6.76) and neutral (M=6.07) feelings, respectively (Table 9). There were significant differences between neutral and fear, neutral and happy, and neutral and calm.

Table 7 One-Way Covariance Test (ANCOVA) Results of the Instant Moods of Special Talented Students on Emotional Intensity Containing Different Emotions and Instant Moods of Participants

Variables	Sum of squares	SD	Mean of squares	F	p	Η²
Instant Mood	26.886	1	26.886	5.251	0.02	0.07
Emotional Intensity containing Different Emotions	129.262	5	25.852	5.050	0.00	0.34
Error	3711.835	116	5.120			
Total	41694.000	122				

Table 8 ANOVA Test for the Effect of Instant Moods of Gifted Children of Music Containing Different Emotions on Emotion Intensity

Variable	Source	Sum of Squares	sd	Mean of Squares	F	p	Η²
Emotion / Music Types	Between Groups	58.061	6	6.451	2.420	0.00	0.33
	Within groups	1924.851	116	2.666			
Total		1982.913	122				

Table 9 Descriptive Statistics Table for the Effect of Instant Moods of Gifted Children to Music Containing Different Emotions on Emotion Intensity

Score	Mood types	*M*	SD
Music types	Fear	7.47	2.28
	Tense	6.94	2.28
	Sad	6.76	2.40
	Happy	7.51	2.17
	Calm	7.59	2.04
	Neutral	6.07	2.61
	Total	7.18	2.30

Table 10 Independent Sample t-Test Table Regarding Emotion Intensity and Gender in Music Containing Different Emotions for Gifted Students

Variable	Gender	N	*M*	ss	t	SD	p
Emotional Intensity	Female	67	7.23	2.20	3.86	120	0.05
	Male	55	7.13	2.41			

The Independent Sample t-Test showed a significant difference between the gender of the students and the emotional intensity of the music containing different emotions ($t(120)=3.86$, $p<.05$). The mean emotional intensity score of female students ($M=7.23$) was higher than that of male students ($M=7.13$) (Table 10). As a result of the effect size analysis, the Cohen d value was determined as 0.04, and this value showed that the effect was at a low level.

On the other hand, there was no significant difference between the instantaneous moods of the gifted children and the gender of the music containing different emotions ($p>.05$).

Results and Discussion

The difficulty of measuring emotions has gone as far as the denial of emotions in psychology. But if emotions cannot be measured, they cannot be said to exist. In today's studies, measurements for emotions are taken place in three ways: self-report measures, physiological measurements, and behavioral measurements (Gültepe, 2014). Self-report measures are obtained by collecting data from individuals, usually through a scale. This one is a relatively easy method. In self-report scales, individuals are asked to evaluate how they felt in a certain period, such as instantaneously or in the last week. (Gencer, 2018). Another way to measure emotions is through physiological measurements. It is the reactions given to the stimuli given when describing the emotions. Starting from here, it causes some changes in the organism. During emotional processes, the parasympathetic or sympathetic nervous systems are activated, which leads to changes in blood pressure or heart rhythm. With the developing technology, imaging processes of brain functions have become more reliable. Devices such as EEG and fMRI make it possible to investigate which brain region the emotions felt are associated

with (Delplanque et al., 2009; Detre & Floyd, 2001). Another method used to measure emotions is behavioral observations. Some researchers tend to measure the emotions of individuals by classifying facial expressions based on the idea that people are given the same facial expressions that are universally basic in some emotional states (Ekman & Friesen, 1986). Measurements of emotions are essential in being aware of our instant emotions. The emotions we feel are very effective in our interpretation of events. Also, our findings showed that the neutralization measurement applied to purify the students' negative emotions served its purpose. Using the neutralization method, the participants are expected to participate in the research with neutral or positive emotions. Previous studies have demonstrated that this measurement provided an objective way to examine the effect of independent variables without any emotional confounding effect (Gültepe, 2014; Öğüt, 2014).

A significant difference was found between the types of music played by gifted students and the types of emotions felt by the students. There is evidence that students felt more positive emotions (happy, calm) than negative emotions (fear, sadness, uneasiness) (Okay, 2014). The most clearly felt emotions are happiness and sadness, and these emotions are the easiest to convey musically (Dalla Bella et al., 2001). Considering the studies on musical transmission, the emotion induced by music is more evident in early childhood than in later periods (Vieillard et al., 2008). Babies at the age of 2-4 months prefer harmonious and cute music over discordant and unpleasant music (Trainor et al., 2002). 3-year-olds can distinguish between happy or sad music belonging to their own culture (Vieillard et al., 2008). At the age of 4, they can pick up the emotions that music tries to convey (Vieillard et al., 2008; Nawrot, 2003), and at the age of 6, they can detect the emotions of sadness, threat, happiness, or anger in music (Vieillard et al., 2008). A child can distinguish between musical moods that an adult makes only after 6 (Kastner & Crowder, 1990; Kratus, 1993; Vieillard et al., 2008). Children can perceive the emotions that music tries to convey so clearly from the early development period because music has an integral feature in terms of emotions (Vieillard et al., 2008). On the other hand, the current finding showed that the music that gives the feeling of neutral emotion was the least felt emotion. This situation can be interpreted as gifted students trying to name the music they listen to with emotion since they feel the emotional intensity at a higher level.

A significant but low correlation was found between the instantaneous mood of gifted students and their emotional intensity. In other words, the participants, who had a positive sense of instant mood, also felt a little more intense emotion. This finding can be explained by the fact that talented students, who feel more deeply the emotion induced by the music they listen to in the environment, try to respond strongly to emotional stimuli due to their high emotional capacity (Mendaglio & Tillier, 2006). Studies report that different musical works affect emotions, intelligence levels, and the intensity of emotion. For example, while Mozart's K.448 sonata stimulates the emotions that create an intense positive mood and increases performance in spatial learning tests, Philip Glass's works have been found to stimulate emotions that create an intense negative mood and decrease performance (Steele et al., 1999). However, experiments show that although music has an effect on mood and negative mood enhances arousal, negative or positive mood is not compatible with spatial learning test performance (Adil & Öztürk, 2021).

In addition, we found a significant low-level difference between the type of emotion given by the music played to gifted students and the intensity of emotion. Also, fear was felt more intensely than the neutral emotion of happy and calm emotions. Considering the emotional development of gifted students, it can be interpreted as the need to make sense of neutral emotions. In a qualitative study by Kratus (1993), he examined the emotional interpretations of the music played by children aged 6-12. In the study, 30 short musical pieces were played to children (n=658), and they were expected to match the emotions these musical pieces tried to convey with calm-excited and happy-sad human facial expressions. As a result of the study, the desired results with the children's comments in all age groups and both genders showed high consistency. As a result of the regression analysis, the children showed a happy-sad difference in the

rhythmic structure of the music and the expression of the passages. Kratus (1993) attributed the difference between calm-excited feelings to rhythmic activity and phrasing features. Finally, there was a significant difference between the emotional intensity of the music genres that the gifted students listened to according to their gender. Although this difference was low, the female students felt the emotional intensity of the music they listened to more. Contrary to the research, Okay (2014) did not find a significant difference in terms of gender. The fact that female students' affective and emotional sensitivity is higher than male students in gifted children supports the result of the research (Condry & Condry, 1976; Stern & Karraker, 1989); cited in Spelke & Grace (2007).

Recommendations

In this study, research was conducted on the musical moods of gifted students. Before this study, no study investigating the mood of gifted children was found in the literature. In the light of this research;

- Teachers should start their lessons by playing music to calm the students and affect their mood positively before starting their lessons,
- Conducting research on the effects of gifted children's moods on their creativity or their self-esteem is needed,
- In this study, universal music accepted all over the world were chosen. Including the music of our own culture in mood studies should be investigated in future studies
- In addition, we suggested to focus on the necessity of giving more place in the literature to studies on musical education and the mental development of music in gifted children.
- Measuring instant emotions before mood studies in new studies,
- A more detailed investigation of this situation, in which the feeling of fear and uneasiness are activated,
- Integration of emotion change studies into different courses,
- It is recommended that emotion studies be added to the curriculum as well.

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