



# Impact of Classical Piano Music on Student Test Anxiety

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**Abstract.** Numerous studies have shown that music may have an emotional and spiritual influence on humans, and there are many studies further exploring this field these days. Sound has already been used in hospitals and institutions for a long time. Music and music therapy, dating back to the start of human civilization, have been the subject of many studies. At the same time, anxiety, stress, well-being, and other similar phenomena always play a significant part in humans' daily life. This research explores the relationship between classical music and student test anxiety. This research chooses a random senior class to complete the experiment. There are 15 students in the group which includes seven females and eight males. It uses The State-Trait Anxiety Scale and the Psychological Well-being Scale to gather data. It contains two completed exams and uses The Paired Samples t-Test to evaluate the data. The research found that when students listened to classical music for 60 days (on schedule), the level of state anxiety did not increase, but that of trait anxiety and psychological well-being did. The level of "autonomy" did not change significantly after listening to the music regularly. The posttest levels of "Positive relations with others", "environmental mastery", "personal growth", and "purpose in life" improved. So, listening music regularly can relieve students test anxiety to some degree.

**Keywords:** classical music, anxiety, well-being, stress

## 1 Introduction

Since the beginning of birth, everyone is exposed to cultural and social knowledge which can make people produce anxiety. Many psychoanalytic theorists have paid much attention to anxiety and they attach importance to techniques to reduce the level of anxiety. As to the relationship between anxiety and fear, fear is a strong anxiety which dreads people when they face external or internal stimuli and try to avoid undesirable physiological, emotional, and mental reactions while anxiety is intense fear appearing when a person cannot resist that stimulus. Freud believed that suppressed emotions and needs can cause anxiety. Anxiety which is always thought to be a bad thing, can improve a person's defenses and sense of self [2]. Anxiety has two forms and one of them is a temporary feeling of fear and sadness that disappears when the danger is gone. When a person is afraid, his or her body changes in response to the extreme terror which contains perspiration, flushing, pallor, and shaking. After the danger passes, the worry decreases which indicates that this kind of anxiety can be

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helpful in dangerous circumstances. But the other form of anxiety, chronic anxiety, is mentally harmful.

Trait anxiety is a daily anxiety inclination to see situations negatively and feel stressed. High trait anxiety causes unease and depression, according to a study in 1983. So, anxiety also affects life satisfaction. Diener<sup>[5]</sup> said that a person's worldview determines his or her level of happiness and that great life pleasure is contentment (subjective well-being). Diener defined happiness as high life satisfaction, many pleasant feelings, and few unpleasant emotions<sup>[10]</sup>. Subjective well-being improves as life satisfaction increases when people experience frequent, powerful, pleasant feelings and enjoys daily activities. According to this relation, Oztürk and Etinkaya<sup>[9]</sup> found an anxiety-wellbeing link which showed that subjective well-being was affected by emotional and cognitive factors. Myers and Deiner<sup>[15]</sup> said that subjective well-being components also contain life enjoyment, joy, enthusiasm, pride, hope, curiosity, alertness, and trust. Life satisfaction is a tool to measure an individual's overall life satisfaction and living environment. To achieve high subjective well-being needs to have high life satisfaction which means the capacity to often experience joyous emotions and occasionally experience sad emotions, according to Eryılmaz<sup>[6]</sup>.

Negative emotions such as irritation, disillusionment, and despair are prevalent so long-term well-being depends on a person's ability to cope with negative situations. Sadness, remorse, rage, concern, and wrath are negative emotions. According to Goçet-Tekin (2014, pp. 9-12)<sup>[18]</sup>, intense or long-lasting negative experiences like anxiety can harm psychological health and damage a person's emotional stability. Counseling and therapy may diminish negative emotions and increase pleasant ones. Numerous studies demonstrate that music, which is thought to have magical qualities, also may promote mental health and alleviate stress (Juslin & Sloboda, 2010),<sup>[17]</sup> Sufis introduced Islamic music and believed music has psychological effects. He also believed that music could treat mental and neurological disorders. The best way to treat patients is to increase their mental power, encourage them to fight the disease more positively, make their living environment pleasant, and give them the close company of others. Good emotional and spiritual health may improve the quality of life and voice tone of humans, as the origin of music, can communicate emotions among people. Music soothes and motivates humans in their daily life and music therapy improves their mental acuity and mental capacity. Therefore, music, which is calm and expressive, can be used in treatment and therapy.<sup>[3]</sup>

The World Federation of Music Therapy (WFMT) defines music therapy as the professional use of music to enhance physical, social, communicative, spiritual, intellectual, and emotional health and well-being (2011).<sup>[19]</sup> The Music Therapy Research Centre (MÜTEM) said that music could help mental, behavioral, and neurological patients to recover (2015).<sup>[20]</sup> Music may promote people's calmness and happiness and can heal some illnesses physically and emotionally. Melodies and rhythms of music may improve the mental and physical health of patients and humans in their daily life. Sezer<sup>[12]</sup> also said that therapeutic music can improve babies' mental well-being. Fetuses can interpret their mothers' heartbeats as music, according to Babacan<sup>[1]</sup>. And he also revealed that babies feel comfort in their mothers' chests because they are familiar with this kind of music, their mothers' heartbeats<sup>[1]</sup>. Another scholar,

called Yücelen<sup>[16]</sup>, says music therapy tries to restimulate forgotten feelings, change the patient's attitude, and develop new emotions to assist the individual in transitioning to a healthy lifestyle.

Music may change autistic, sedentary, irritable, or sad people's moods and movements and affect people's spirit, emotions, and inner world. It makes people happy, creative, and passionate, encourages us to make positive thinking, and helps us avoid disorders which are related to stress. So, some scholars think certain types of music, genres, and rhythms may be able to treat spiritual and physical illnesses in humans and animals. Music therapy can reduce pain, fear, and anxiety, according to Frank (1985)<sup>[21]</sup>. So, his medical program attempts to assist patients in recovering from physical discomfort by teaching them relaxation techniques, educating them on the detailed mechanisms to relieve pain, and creating a pleasant living environment to make them happy. However, Güner (1998)<sup>[22]</sup> discovered that music might also produce unpleasant attitudes in humans. Thus, it is really vital to know which musical genres can promote pleasant thoughts and which cannot. According to the literature review of this research, classical music is a kind of music which can lessen human anxiety and tension to enhance well-being. Therefore, classical music was picked as the topic of the experiment.

The phrase "classical music" refers to European polyphonic music, which is linked with high civilization, unlike eastern and western folk music. Jazz, as a kind of classic music, which was never as popular as folk music, has become more and more popular around the world. So, classical music is utilized more commonly in music and psychology studies than other genres when psychologists have a great interest in exploring the impact of music on living creatures. There are many studies on this topic have been done and the psychological and physiological impacts of classical music on people, animals, and plants have already been examined<sup>[7]</sup>.

This study assimilates the findings and experience of previous research and examines how people's anxiety and well-being are impacted by music in their daily lives, how music may influence the management of anxiety and well-being, and whether music might improve people's psychological states. Based on music's impact on anxiety levels and well-being, this study will be utilized to develop some preventive measures in the future. This research uses an experimental rather than a control group to assess music's effects on anxiety and happiness. Throughout the whole experimental procedure, the experimental group listened to classical music on schedule and no one should disturb them. During this investigation, the following hypotheses were examined:

- 1) Trait and state anxiety levels of experimental group post-test takers are higher than pretest takers who act as the control group.
- 2) The experimental group's post-test well-being scores are considerably higher than their pretest scores.

## 2 Technique

The current research uses an experimental paradigm and contains a pretest and post-test for a single group of participants. There is no control group in this experiment and the data of the pretest takers as the data of the control group.

### 2.1 Experimental Cluster

Participants enrolling in the Department of Guidance and Psychological Counseling at Kafkas University were randomly allocated to either the control or experimental groups. Fifteen individuals formed a group which has a total of seven females and eight males. To choose the fitful participants for this research, fifty students took The Psychological Well-being Scale and the Trait-State Anxiety Inventory. The students who are chosen as participants in this study are those who had the highest levels of anxiety according to the report of these two tests.

### 2.2 Data Collection Tools

#### 2.2.1 State-Trait Anxiety Inventory

Spielberger and his colleagues invented the State-Trait Anxiety Inventory in 1970 using a Likert scale. On a four-point scale, the possible responses range from "Not at all" to "Completely," with "Completely" receiving the highest score. Since he carried them out, Oner (1977) <sup>[23]</sup> has been accountable for evaluating the legality and integrity of the Turkish inventory. The State-Trait Anxiety Inventory has both open-ended and not open-ended questions. Indirect expressions are connected with pleasant emotions, while direct remarks are associated with negative ones. After this question design phase, they determine direct and reverse-coded item weights. Then, there will be a correction of the scores: State Anxiety Inventory: 50; Trait Anxiety Inventory: 35. Dalaner<sup>[4]</sup> and Oner and Le Compte<sup>[22]</sup> said that people's ultimate scores may indicate their levels of anxiety. This research found the state-trait anxiety scale to be 0.91 reliable. Several criteria were considered before making this conclusion.

#### 2.2.2 Psychological Comfort Scale

Ryff <sup>[11]</sup> developed the Psychological Comfort Scale to assess mental health. Cenkseven (2004) translated the 84 questions of the Psychological Well-Being Scale<sup>[24]</sup>, each sub-dimension of which has fourteen constituents. On this scale, the minimum possible score is 84, while the maximum is 504. That the individual's score improves indicates that their mental health improves. It takes some aspects of psychological well-being into account in the development of the scale, which means self-determination entails initiative, independence, and autonomy. This scale supports that enjoyable relationships and interactions with others are joyful and advocates a conviction that one's life is meaningful to others. Self-acceptance entails a positive outlook on one's self and past. The internal consistency reliability coefficient of the subjective

well-being scale was established to be 0.97 for the research to meet its goals.

### 2.3 Analyzing Data

The acquired statistics are scrutinized with the help of the SPSS 20 software package. The Paired Samples T-test is applied to assess the data suitably.

### 2.4 Experimental Application Process

Firstly, the State-Trait Anxiety Inventory and the Psychological Well-Being Scale were given to the experimental group's students. Then, participants used their own mobile devices to listen to a series of six Mozart works. A single piece was performed 120 times every day. The Music Listening Schedule, which the students were supposed to complete every day, was printed out and sent to the students. As a result of that, youngsters can spend much fixed time listening to music. The State-Trait Anxiety Inventory and the Psychological Well-being Scale would be administered six days later.

## 3 Outcomes

According to the Shapiro-Wilk Test, the data distribution was normal in all sub-dimensions except self-acceptance. This research makes this conclusion via a test which aims to assess whether the data are regularly distributed. The results of a Paired Samples T-test on the data are shown in Table 1.<sup>[8]</sup>

**Table 1.** Data Chart Analysis

Category	N	Mean	Standard Deviation	Std. Error Mean	T	Df	sig
Pretest State Anxiety	15	41.7353	5.10555	1.318	-1.311	14	.211
Posttest State Anxiety	15	44.4000	5.20714	1.344			
Pretest Trait Anxiety	15	49.8000	4.94542	1.276	3.451	14	.004
Posttest Trait Anxiety	15	43.8667	4.76395	1.230			
Pretest Positive Relations with Others	15	57.9333	13.98196	3.610	-2.913	14	.011
Posttest Positive Relations with Others	15	70.6000	8.32209	2.148			
Pretest Autonomy	15	56.4667	12.30486	3.177	-1.917	14	.076
Posttest Autonomy	15	63.2000	6.72097	1.735			
Pretest Environmental	15	50.8667	14.80283	3.822	-4.348	14	.001

<b>Mastery</b>							
<b>Posttest Environmen- tal Mastery</b>	15	67.4000	4.77793	1.233			
<b>Pretest Personal Growth</b>	15	61.4667	13.06504	3.373	-2.838	14	.013
<b>Posttest Personal Growth</b>	15	71.8000	6.41650	1.656			
<b>Pretest Purpose in Life</b>	15	54.6000	10.74909	2.775	-3.167	14	.007
<b>Posttest Purpose in Life</b>	15	66.2667	7.90539	2.041			
<b>Pretest Self-acceptance</b>	15	48.4667	10.46673	2.702	-5.396	14	.000
<b>Posttest Self- acceptance</b>	15	65.1333	4.59606	1.186			
<b>Pretest Subjective Well-being Total</b>	15	329.8000	67.95818	17.546	-3.699	14	.002
<b>Posttest Subjective Well-being Total</b>	15	404.4000	26.76832	6.911			
<b>Pretest Anxiety Total</b>	15	91.5333	8.14043	2.10185	1.013	14	.328
<b>Posttest Anxiety Total</b>	15	88.2667	8.14570	2.10321			

Table 1 demonstrates no significant change in statistics between the State Anxiety Scale pretest and posttest ratings ( $p > 0.05$ ). The Trait Anxiety Scale demonstrates a significant change between pretest and posttest levels ( $p = .004$   $0.01$ ), which supports the notion that music can reduce trait anxiety. "Positive relation with others" ( $p > .05$ ), "environmental mastery" ( $p > .01$ ), "personal growth" ( $p > .05$ ), "purpose in life" ( $p > .01$ ), and "self-acceptance" ( $p > .001$ ) had significant variations between pretest and posttest averages. The results show that Psychological Well-being Scale scores have increased since the research began. On the Psychological Well-being Scale, "autonomy" increased although the "p" value was over .05. All in all, the participants reported less anxiety and had a higher feeling of well-being after taking the listening schedule.

#### **4 Discussion, Conclusion, and Recommendations**

Music has the potential to improve a person's quality of life by encouraging self-expression, decreasing levels of anxiety, alleviating physical illnesses, enhancing time management, and teaching ways to manage stress. Music, which is thought to comfort individuals of all ages and stages, may produce good or negative feelings depending on its genre. Rützel and O'Hagan (2002)<sup>[25]</sup> think that music can cause major changes in neurological systems and brain wave patterns (beta, theta, alpha, and delta). Several studies have verified the same findings.

More and more people hold psychology degrees in society, according to Altınköprü (2013)<sup>[26]</sup>. Therefore, more people think that music therapy may be beneficial to patients. According to the findings of this study, listening to classical music regularly can revitalize and soothe the participants. Previously, Sezer<sup>[13]</sup> investigated the impact of music therapy on the rage, anxiety, and depression of high school and college students. He investigated the anger control of 44 high school pupils. According to his research, music therapy may be beneficial to teenagers. Another scholar, Uzun<sup>[14]</sup>, revealed that music therapy apps were helpful in adolescent relaxation, self-esteem, aggression management, anxiety reduction, communication, attention and concentration, and cognitive and mental development.

Wu<sup>[15]</sup> investigated the effects of 20-hour music therapy on anxiety, melancholy, and well-being. His study used both qualitative and quantitative methodologies. The level of anxiety and despair decreased, while the degree of self-esteem increased. According to qualitative data, participants had more life happiness, confidence, relaxation, and less unpleasant feelings after listening to 20-hour music.

According to Gagner-Tjelleesen et al. (2001)<sup>[27]</sup>, music listening may increase endorphin release and also lower blood pressure and heart rate. He also discovered that music can alleviate the pain of people. Both of these effects might be caused by brain stimulation. Güner (1998)<sup>[22]</sup> investigated the effect of music on adolescent violence. In his experiment, Arabic, metal, and classical music were mixed. He discovered that heavy metal enthusiasts were more violent and irritated than other music lovers. Ogel et al. (2007)<sup>[28]</sup> even discovered that drug-addicted teenagers love rap, hip-hop, techno, and dance music. According to several other studies, teens may be harmed by rock and metal music, which is becoming a pervasive issue in the United States.

A previous study found that music may have both positive and negative effects on biological beings. Certain musical instruments, styles, and genres may alleviate anxiety, depression, stress, irritability, panic attacks, insomnia, ADHD, and learning difficulties and be a good treatment for certain mental illnesses. Because of children's unpredictable musical interests, parents need to educate them on many musical genres. So, the content of school music instruction must be more effective and informative. In this way, when children are developing their identities, it is advantageous for their mental health to expose to various musical styles. Lyrics, meaning, and rhythm may also help with their mental health. Music alone would not be enough as a treatment because many factors can influence people's emotions. Therefore, music applications only work with other apps when they are used together.

## Reference

1. Babacan, Ş. İ. (1998). Türkiye'de Ruh Hastalıklarının Tedavisinde Müziğin Rolünün Müzik Eğitimi Açısından İncelenmesi ve Yorumlaması. Yayımlanmamış Yüksek Lisans Tezi, Gazi Üniversitesi, Fen Bilimleri Enstitüsü, Ankara.
2. Burger, J. M. (2006). Personality. İstanbul: Kaknüs Psikoloji.
3. Campbell, D. (2002). Mozart etkisi, Kitap matbaacılık, İstanbul. Çam, O., & Altınköprü, H. (2013). Üniversite Öğrencilerinde Müziğin Ruhsal Duruma ve Stresle Başa

- Çıkma Tarzları Üzerine Etkisi/Motif Akademi Halkbilimi Dergisi/2013-2 (Temmuz-Aralık) (Kıbrıs Özel Sayısı II) (pp. 262-272).
4. Dalaner, H. (2000). İnseminasyon Uygulanacak Kadınlarda İnseminasyon Öncesi ve Sonrası Durumluk-Sürekli Kaygı Düzeylerinin İncelenmesi. Yayınlanmamış Yüksek Lisans Tezi, Ege Üniversitesi.
  5. Diener, E. (2000). Subjective Well-Being The Science of Happiness and a Proposal for a National Index. *American Psychologist*, 55(1), 34-43. <https://doi.org/10.1037/0003066X.55.1.34>
  6. Eryılmaz, A. (2010). Ergenlerde Öznel İyi Oluşu Artırma Stratejilerini Kullanma İle Akademik Motivasyon Arasındaki İlişki. *Klinik Psikiyatri*, 13, 77-84.
  7. Öner, N. (1994). Türkiye’de Kullanılan Psikolojik Testler. Boğaziçi Yayınları, İstanbul.
  8. Öner, N., & Le Compte, A. (1983). Durumluluk-Sürekli Kaygı El Kitabı. Boğaziçi Üniversitesi Yayınları No: 333, İstanbul.
  9. Öztürk, A., & Çetinkaya-Siviş, R. (2015). Eğitim fakültesi öğrencilerinin öznel iyi oluş düzeyleri ile tinsellik, iyimserlik, kaygı ve olumsuz duygu düzeyleri arasındaki ilişki Marmara Üniversitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi. *Journal of Educational Sciences*, 1(42), 335-356. <https://doi.org/10.15285/ebd.98899>
  10. Proctor, C. L. (2014). Subjective Well-Being. *Publisher: Springer*. [https://doi.org/10.1007/978-94-007-0753-5\\_2905](https://doi.org/10.1007/978-94-007-0753-5_2905)
  11. Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081. <https://doi.org/10.1037/0022-3514.57.6.1069>
  12. Sezer, F. (2009). Müzikle Terapinin Sınav Kaygısı, Öfke ve Psikolojik Belirtiler Üzerindeki Etkisi. Yayınlanmamış Doktora Tezi, Atatürk Üniversitesi, Sosyal Bilimler Enstitüsü, Erzurum.
  13. Sezer, F. (2011). Öfke ve psikolojik belirtiler üzerine müziğin etkisi. *Uluslararası insan bilimleri dergisi*, 8(1), 1472-1493.
  14. Uzun, G. (2018). Lise öğrencilerinin ruhsal gelişimi ve ergenliğe bağlı negatif etkilerin.
  15. Wu, S. M. (2002). Effects Of Music Therapy On Anxiety, Depression and Self-Esteem of Undergraduates. *Psychologia*, 45(2), 104-114. <https://doi.org/10.2117/psysoc.2002.104>
  16. Yücelen, E. (2006). Eski Türklerde Müzikle Tedavi.
  17. Juslin, P. N., & Sloboda, J. A. (Eds.). (2010). Handbook of music and emotion: Theory, research, applications. Oxford University Press.
  18. Gocet Tekin, E., & Satici, B. (2014). An investigation of the predictive role of authenticity on subjective vitality. *Kuram ve Uygulamada Eğitim Bilimleri*, 14(6), 2063–2070.
  19. World Federation of Music Therapy [WFMT].-President presents: Announcing WFMT's NEW Definition of Music Therapy2011Retrieved from [http://www.wfmt.info/WFMT/President\\_presents...\\_files/President%20presents...5-2011.pdf](http://www.wfmt.info/WFMT/President_presents..._files/President%20presents...5-2011.pdf) <https://uskudar.edu.tr/mutem/en/general-information>
  20. Frank, J. M. (1985). The effect of music therapy and guided visual imagery on chemotherapy induced nausea and vomiting. *Oncol Nurs Forum* (p. 12).
  21. Güner, N. (1998). Ergenlerin Dinledikleri Müzik Türü İle Saldırganlık Düzeyleri Arasındaki İlişkinin İncelenmesi, VII. Ulusal Eğitim Bilimleri Kongresi, Konya, 1, 291-299.
  22. Öner, N. (1977). Türkiye’de Kullanılan Psikolojik Testler. Boğaziçi Yayınları, İstanbul.
  23. Cenkseven, F. (2004). Üniversite öğrencilerinde öznel ve psikolojik iyi olmanın yordayıcılarının incelenmesi. Yayınlanmamış doktora tezi, Çukurova Üniversitesi Sosyal Bilimler Enstitüsü, Adana.



25. Ruutel, E. (2002). The Psychophysiological Effects of Music and Vibroacoustic Stimulation. *Nordic Journal of Music Therapy*, 11(1), 16-26. <https://doi.org/10.1080/08098130209478039>
26. Çam, O., & Altınköprü, H. (2013). Üniversite Öğrencilerinde Müziğin Ruhsal Duruma ve Stresle Başa Çıkma Tarzları Üzerine Etkisi/Motif Akademi Halkbilimi Dergisi/2013-2 (Temmuz-Aralık) (Kıbrıs Özel Sayısı-II)(pp. 262-272).
27. Gagner-Tjellesen, D., Yurkovich, E. E., & Gragert, M. (2001). Use of music therapy and other ITNIs in acute care. *Journal of psychosocial nursing and mental health services*, 39(10), 26-37.
28. Ögel, K., Ermağan E., Eke, C. Y., & Taner, S. (2007). Madde Deneyen ve Denemeyen Ergenlerde Sosyal Aktivitelere Katılım: İstanbul Örneklemi. *Journal of Dependence*, 8(1), 18-23.

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