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## IMPACT OF MUSIC ON ANXIETY: A COMPARATIVE STUDY BETWEEN MUSIC & NON-MUSIC STUDENTS

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**Abstract:** Poor psychological wellbeing impacts negatively on the functional life of individuals and leads to disability and disorder and unexpected behaviour. Globalization and technological advancement has made life very fast which has brought psychological problems which has become a global concern. To address this problem various therapeutic methods are available. But it is a requirement to find out an alternative method to address the problem which is easily accessible and cost-effective which can promote mental health and prevent risk factors affecting mental health. Anxiety, a common mental health issue, is a natural response of body and mind to stress and is an unpleasant emotional experience. When it becomes chronic and of greater intensity or duration, it becomes a disorder and leads to impairments and disability. Anxiety can cause stress and depression and so reduction and management of anxiety is necessary for promotion of mental health. Various research showed that music is considered as an effective alternative treatment for anxiety as it is easy accessible, inexpensive and easy to incorporate in everyday life. The present study tried to assess the impact of music on anxiety management by comparing the level of anxiety between university students studying music and non-music subjects as major subjects. The data analysis tool showed that less number of music students had level of anxiety than the non-music students. The present study revealed that music has the potential to improve and enhance the capability of human being to prevent the stressors that cause anxiety through formal music education. The research suggests music can be used as an effective therapeutic tool for intervention and promotion for management of anxiety.

**Key words:** Anxiety, music-therapeutic tool, mental health, promotion-prevention, psychological wellbeing

### Introduction

The social condition, growth and development of a nation are tied with physical and emotional wellbeing of its people. Poor psychological wellbeing impacts negatively on the functional life, education, productivity, effectiveness, social and family activities leading to disability and disorders, unacceptable behaviours like violence, anti-social activities, substance abuse, suicide etc. Due to rapid technological advancement and globalization life has become very fast, competitive and challenging giving rise to mental health related problems. Psychological ill health is the result of the hazards of the present socio-economic environment as well

as inability to handle and cope with day to day life challenges. The increasing rate of mental health problem and disability has become a global concern. Students, youth and working community are mostly affected population which has an adverse impact on the socio-economic growth of a nation. Addressing this problem is a requirement for sustainable progress and development of an individual as well as society.

Across the globe a wide range of psychotherapeutic approaches to address mental health problem are available – both pharmacological and non-pharmacological. But the conventional therapy is generally meant for those who are mentally ill which is not adequate to address the problem. It is a requirement to find out an easily accessible and low cost treatment to manage mental health for the promotion of mental health and prevent it from the risk factors. This can be in the form of complementary and alternative therapy (CAT) in addition to standard care (Lee & Thyer, 2013). Music is one such effective CAT.

Music has a close association with human life and emerged spontaneously throughout human history across all cultures (Peretz, 2006). Through ages music is believed to influence emotion. Research studies have revealed that in addition to being a prime source of entertainment, music has psychological and physiological effect on human being which is gradually used for clinical intervention to treat psychological and physiological ailments. The use of music as a healing intervention is common through history (Alridge, 1994). The psychological effects of music can be powerful and wide ranging that can be used as an intervention to promote emotional health, cope with stress, boost psychological wellbeing and can provide insight into different aspects of personality (Cherry, 2019). It can restore, maintain and improve psychological and physical wellbeing and is used as a scientific method as curative tool.

Psychological wellbeing means a balanced daily life, feeling good and functioning effectively. It is common fact in day to day life one cannot always feel good and may have painful experiences, for example sadness, frustration etc. The ability to struggle and cope with these negative emotions determines long term wellness.

### **Anxiety: A Key Mental Health Issue**

The common mental health issues an individual faces in everyday life are anxiety, stress and depression. These are the key indicators of mental health disorder which lead to many other physical and psychological ailments. Anxiety is a natural response of body and mind to stress and is considered as an unpleasant emotional experience. It is a state of extreme concern and fear when a person faces difficulty in preventing negative physical and emotional reaction to the stressors causing anxiety. Anxiety, stress and similar psychological issues are common phenomenon in everyday life. It is a normal human emotion characterized by feelings of tension, worried thoughts and physical changes (American Psychological Association). Experiencing occasional anxiety is a normal part of life. It is sometimes very crucial in some situation as it alerts us towards danger and helps us prepare and pay attention. But when it becomes chronic and the symptoms become of greater intensity or duration than it is normally expected, it becomes disorder and leads to impairments and disability. Individuals

suffering from this disorder do not know how to stop the worry cycle which becomes beyond their control and interferes with daily functioning. When negative emotions such as anxiety become severe or prolonged, the psychological wellbeing interferes negatively with individuals' ability to maintain daily life with positive emotions (Osmanoglu & Yilmaz, 2019).

The key mental health issues like depression, anxiety and stress are interrelated which are associated with negative emotional state that effect the academic, personal and social life and thereby overall wellbeing of the young students. Anxiety influences entire being of individual such as how we feel, how we carry on with physical side effects (Bharadwaj, 2017). Prolonged anxiety causes serious psychological problems like depression, insomnia and leads to impairments and many severe diseases. Anxiety can trigger depression (Haigh & Jarvis, 2017) and anxiety can cause both stress and depression; stress can increase anxiety and depression (Nima et al., 2013). To reduce mental health and other psychological problem, individual or group intervention for reduction and management of anxiety has become a need for promotion and prevention of mental health before it becomes severe. Previous researches suggest that music is one of the effective tools for management of anxiety.

### **Music as a Tool for Anxiety Management**

Management of anxiety is very important for individual in their positive functional life and satisfaction. For this reason different pharmacological and non-pharmacological treatments are available. It is a requirement to find out an easily accessible and low-cost treatment for management of anxiety. Music is a promising alternative treatment for anxiety as it is accessible, inexpensive and easy to incorporate into everyday life. (Finn & Fancourt, 2018). Listening to music can affect an individuals' inner world, soul and emotion that can lead to feel happy, creative and enthusiastic and to think positively and can treat mental illness caused by anxiety and stress (Osmanoglu & Yelmaz, 2019). From prehistoric period to the modern times it has been shown that desirable sound of music had a wide range of psychological and physiological beneficial health effects in diverse population in different conditions (Murrock & Higgins, 2009). Music is considered to be a great power in ancient Greece and has been reported to lead to emotional changes, relief and reduce stress (Juslin & Sloboda, 2010). The theory of music, mood and movement (MMM) that explains how music affects human psychological response, says that music produces psychological response of altered mood leading to improved health outcomes (Murrock & Higgins, 2009). Music can function in modifying the negative effect on emotion and positive effect on anxiety reduction and can be used to promote emotional changes (Kerr et al., 2001). Music increases effective modification and emotional restructuring which help in reducing harmful psychological responses and decreases the level of anxiety (Kerr et al., 2001. & Lee et al., 2005). Listening to music has the inherent ability to decrease psychological stress response in reduction of anxiety. Music reduces anxiety and stress by distracting the sufferer's attention from negative stressors to something pleasant and soothing experience.

Various studies conducted by researchers revealed that music listening help in reducing anxiety level. Ferrar (2007) conducted a study to investigate the effect of music on anxiety level on patient undergoing chemotherapy and found statistically significant improvement on the measures of anxiety, fear, relaxation and fatigue. In other two separate studies Wu et al. (2008) & Lai et al. (2008) found significant improvement in the sense of anxiety in the patients on mechanical ventilation and patients undergoing root canal treatment. Bharadwaj (2017) in his study also found significant effectiveness of music therapy in reducing stress and anxiety level of the university students. In a study Yang et al. (2012) investigated the effectiveness of music therapy on psychiatric indoor patients. The result of pre and post test suggested that the experimental group participants had lower score on anxiety scale. Interventions to decrease preoperative anxiety include not only anxiolytic medicine but also methods for distraction such as music (Nilsson, 2008). Listening to music modulate anxiety level induced by the experience of stress. A decrease in anxiety after listening to music is the most consistent finding reported in field study with patients (Thoma et al., 2013). In a study conducted by Voss et al. (2004), it was found that sedative music was more effective than scheduled rest and treatment in decreasing anxiety and pain in open heart surgery patients.

### **Music, Brain and Anxiety**

Music stimuli have biological effect on human behaviour by engaging specific brain functions involving memory, learning and multiple motivational states (Nilsson, 2008). Research studies have found the neurobiological basis of music to alter or elevate emotion that has psychological response to reduction of anxiety and stress. Musical elements (i.e. melody, timbre, pitch, rhythm, tempo etc.) are processed in different parts of the brain and are shown to elicit a wide range of emotional responses in the listener (Murrock & Higgins, 2009). The elements pass through the auditory cortex of the brain and thereby processing in the limbic system of the brain to elicit emotion (Tramo, 2001; Hegde, 2017). Music triggers the neurotransmitters in the brain which alter, change and regulate the irregularities of psychological and physiological functioning. Biologically the body responds to any stressful situation by releasing cortisol. Excess release of cortisol results in anxiety and stress. Music influences positively and helps to reduce the release of excess cortisol and lowers the level of anxiety and stress. Studies have found that listening to music can calm the nervous system that can help producing positive emotion, decrease anxiety and influence overall mental health (Ferrano, 2021). Music can also help in reducing anxiety and stress by distracting from the stressors causing anxiety about any past, present or future event by triggering the pleasure centers in the brain.

Keeping the above in view the present research tried to investigate the effectiveness of music for intervention and promotion of mental health by reducing the level of anxiety. The study compared the level of anxiety between the students studying music and the students studying non-music subjects as major subject at university level. This also ascertained whether formal music education or active participation in music can reduce the level of anxiety of the participants.

## Objectives

- To assess the level of anxiety of the students studying music and the students studying non-music subjects at the university level.
- To compare the level of anxiety of the students studying music and the students studying non-music subjects at the university level.

## Research design

The study was conducted based on cross-sectional survey research design. The study was conducted on a sample of 934 students drawn from the affiliated colleges and departments of the University of Calcutta and Rabindra Bharati University, out of which 462 students (94 male & 368 female) were studying music and 472 students (185 male & 287 female) were studying non music subjects as major subjects. The self reporting version of DASS21 (depression, anxiety & stress scale) was administered to collect data. DASS21 rating scale contained 5 severity levels scores i.e. normal, mild, moderate, severe and extremely severe. In the present study, sample scoring extremely severe is considered having definite diagnosable symptom of anxiety, severe is considered having significant symptoms, moderate as high risk and mild and normal indicating having little and no symptoms of anxiety.

## Data Analysis

Data collected through the screening tool were tabulated and analysed using descriptive statistics to show the percentage distribution and comparison is shown through graphical representation.

**Table 1. Percentage distribution of anxiety of total sample, and major subject wise variable:**

			Distribution		
			Total Sample	Music	Non Music
<b>Level of Anxiety</b>	Normal	Count	380	205	175
		% within Group	40.7%	44.4%	37.1%
	Mild	Count	94	44	50
		% within Group	10.1%	9.5%	10.6%
	Moderate	Count	261	124	137
		% within Group	27.9%	26.8%	29.0%
	Severe	Count	91	39	52
		% within Group	9.7%	8.4%	11.0%
	Extremely Severe	Count	108	50	58
		% within Group	11.6%	10.8%	12.3%
	Total	Count	934	462	472
		% within Group	100%	100%	100%

Table no. 1 shows that out of total 934 sample 108 (11.6%) students had extremely severe i.e. definite diagnosable symptoms of anxiety, 91 students (9.7%) had severe level i.e. significant symptoms of anxiety, and 261 (27.9%) had moderate level i.e. at high risk of anxiety. Rest of the students had either mild or no symptoms of anxiety.

Out of 462 students studying music 50 (10.8%) scored extremely severe i.e. definite diagnosable symptoms, 39 (8.4%) scored severe i.e. significant symptoms and another 124 (26.8%) students had moderate level i.e. at high risk. 9.5% showed mild level and 44.4% had no symptoms of anxiety.

Out of 472 non music students 58 (12.3%) had extremely severe, 52 (11.0%) had severe and 137 (29.0%) had moderate level of anxiety. Out of total non- music students 50 students (10.6%) had mild and 175 (37.1%) had normal level of anxiety.

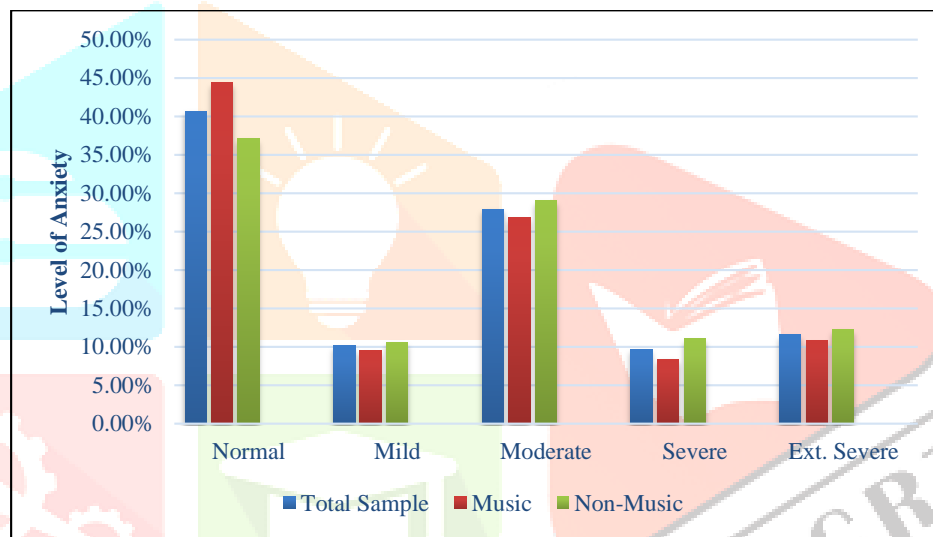


Figure 1. Comparison of level of anxiety of students studying music with total sample and non-music students

The above figure illustrates the comparison of level of anxiety between music students and total sample, and between music and non-music students. According to percentage distribution 0.8% less number of music students showed extremely severe level of anxiety, 1.3% less at severe level and 1.1% less at moderate level of anxiety. This shows that less number of music students showed symptoms of anxiety than the total sample. In case of comparison of level of anxiety between music and non-music students, it was observed that 1.5% less number of music students had extremely severe level, 2.6% less at severe level and 2.2% less at moderate level than the non-music students.

**Table 2. Percentage distribution of anxiety level of the male students studying music and male students studying non-music subjects:**

			Male		Total
			Music	Non Music	
Level of Anxiety	Normal	Count	42	65	107
		% within male gr	44.7%	35.1%	38.4%
	Mild	Count	7	21	28
		% within Male gr	7.4%	11.4%	10.0%
	Moderate	Count	25	59	84
		% within Male gr	26.6%	31.9%	30.1%
	Severe	Count	5	24	29
		% within Male gr	5.3%	13.0%	10.4%
	Extremely Severe	Count	15	16	31
		% within Male gr	16.0%	8.6%	11.1%
	Total	Count	94	185	279
		% within Male gr	100%	100%	100%

Out of total 279 male students 94 were studying music and 185 were studying non-music subjects. Among 94 male music students 15 (16.0%) scored extremely severe level, 5 (5.3%) had severe level and 25 (26.6%) had moderate level of anxiety. On the other hand, out of 185 male non-music students 16 (8.6%) scored extremely severe, 24 (13.0%) had severe level and 59 (31.9%) had moderate level of anxiety. This shows that though at extremely severe level music students were more by 7.4%, at severe level they are less by 7.7% and at moderate level they are less by 5.3%. Putting these together, less number of male music students showed symptoms of anxiety than male non-music students.

**Table 3. Percentage distribution of anxiety level of the male students studying music and female students studying non-music subjects:**

			Female		Total
			Music	Non Music	
Level of Anxiety	Normal	Count	163	110	273
		% within female gr	44.3%	38.3%	41.7%
	Mild	Count	37	29	66
		% within female gr	10.1%	10.1%	10.1%
	Moderate	Count	99	78	177
		% within female gr	26.9%	27.2%	27.0%
	Severe	Count	34	28	62
		% within female gr	9.2%	9.8%	9.5%
	Extremely Severe	Count	35	42	77
		% within female gr	9.5%	14.6%	11.8%
	Total	Count	368	287	655
		% within female gr	100%	100%	100%

Out of total 655 female students 368 were studying music and 287 were studying non-music subjects. Among 368 female music students 35 (9.5%) scored extremely severe level, 34 (9.2%) had severe level and 99 (26.9%) had moderate level of anxiety. On the other hand, out of 287 female non-music students 42 (14.6%) scored extremely severe, 28 (9.8%) had severe level and 78 (27.2%) had moderate level of anxiety. This shows that 5.1% less number of female music students had extremely severe level, 0.6% less at severe level and 0.3% at moderate level than the female non-music students. This indicates that less number of female music students had symptoms of anxiety at all the three levels than female non-music students.

## Result

Among the total sample 11.6% students had definite diagnosable symptoms of anxiety scoring extremely severe score. Among the students studying music 10.8% students were found having definite diagnosable symptoms of anxiety where as 12.3% non-music students exhibited definite diagnosable symptoms. According to score in severe level or significant symptoms of anxiety 9.7% of total sample scored severe level, 8.4% of music students scored severe level, where as 11.0% non-music students were placed in the same level. 27.9% of total sample, 26.8% of music students, and 29.0% of non-music students had moderate level of anxiety or at high risk. This indicates that less number of students studying music had anxiety than the non-music as well as total sample at all the three levels. As a result, more number of music students was found at normal level (44.4%) than the non-music students (37.1%).

Among the total male students, the music students scored 16.0%, 5.3% and 26.6% i.e. extremely severe, severe and moderate level respectively as against non-music students' scores of 8.6%, 13.0% and 31.9%. Putting all these together less number of music students had symptoms of anxiety than the non-music male students. Similarly, for female students, music students were 9.5%, 9.2%, 26.9% at extremely severe, severe and moderate level respectively as against non-music students' 14.6%, 9.8% and 27.2%. As such, female music students were less in number exhibiting symptoms of anxiety than the female non-music students.

## Discussion

The study aimed at assessing the impact of music on the level of anxiety, one of the key predictors of mental health, by comparing the anxiety level between the students studying music and the students studying non-music subjects as major subject at university level and tried to find out the relationship between music and anxiety management. Anxiety is a normal human emotion and people feel anxiety for one reason or other at one time or another. But, when one regularly feels disproportionate levels of anxiety with greater intensity or duration, it becomes anxiety disorder. Severe or prolonged anxiety can lead to poor social life and individuals' emotion negatively (Gocet & Tekin, 2014). Anxiety is common but it is found more in adolescents and youth particularly studying in colleges and universities (Bisson, 2017) due to multiple reasons like academic pressure, carrier related issues, complicated relationships, socio-economic hazards etc.



Daily mental health problem has become a global problem as it not only affects the individuals but it affects the social and economic growth of a nation. The life time prevalence of anxiety disorders across the globe ranges between 3.0% to 19.0% (Kessler et al., 2009). Anxiety disorder is considered as the 6<sup>th</sup> largest contributor of years lived with disability according to global burden of disease 2015 (WHO, 2017). WHO also reports that 3.6% (264 million) of the global population suffer from anxiety disorder. Study conducted by Harney et al. (2022) reported that in the UK one third of individuals experience clinical level of anxiety in their lifetime. According to Indian National Mental Health Survey 2016, prevalence of anxiety disorders in India is 2.57% (Manjunatha et al., 2022). But, anxiety disorder is primarily remains undetected and so it remains untreated or undertreated despite huge disease burden which leads to substantial health impairment and economic loss (Manjunatha et al., 2022).

The scenario explained previously demands addressing the problem effectively to minimize the level of anxiety through promotion of mental health and suitable means for prevention of the risk factors causing anxiety. Receptive and creative cultural activities are considered significantly associated with health promotion by lowering anxiety and depression (Cuypers et al., 2012). Music has been proved and considered as one of the finest of receptive and cultural activities. Active participation in music is an effective tool of managing feeling and emotion which in turn is effective in reducing level of anxiety.

Various studies revealed that music has impact on mental health and active participation in music through formal music education system leaves reasonable impact on mental health of the students when they are compulsorily exposed to music over a period of time through learning, training, practicing and performing. Based on this assumption the present study compared the level of anxiety between music and non-music students studying at university level to find out the impact of music on anxiety. At the very basic level of study the comparison of the level of anxiety revealed that non-music students as well as the total sample were more symptomatic at anxiety level than the music students. When compared subject wise male and female students separately, also it showed that both male and female music students were less in number in the level of anxiety than the male and female non-music students.

The psychological perspectives of music indicate its influence on human mind for regulating human feelings and emotions. Our study also indicates the same. It supports the findings of Alridge (2000), Habe (2010), Swaminathan & Schellenberg (2015). Everyday musical activity can have psychotherapeutic effect on internalizing psychopathology through emotion regulation (Miranda et al. 2012). Our study is in agreement with this as the university students are continuously involved in musical activities through their curriculum. Our finding also supports the study of McCall (2017), who stated that when college students face mental stress during their academic carrier music can serve as an aid. The present study also in agreement with Welch et al. (2020) that the university students engaged in music performance had better psychological health ratings.

The finding of the study is indicative of the fact that music is an effective tool for the promotion of mental health and prevention of the risk factors causing anxiety and it can be used as one of the effective psychotherapeutic tool which is safe, cost effective and easily accessible.

## Conclusion

Anxiety disorder is one of the common mental health problems and most of the time it remains undetected, untreated or undertreated till it becomes a serious disorder. We have discussed earlier that prolonged anxiety can lead to anxiety disorder and several health hazards. The alarming global mental health situation requires an effective solution to manage a healthy mental state. The finding of the present study indicated that creative and active involvement in musical activity can make reasonable improvement in the mental health status by reducing level of anxiety. WHO (2001) also insisted on promotion of mental health to reduce the increasing burden of mental disorder. Considering this, the present study revealed that music has the potential to improve and enhance the capability of human being to prevent the stressors that cause anxiety through formal music education. Because of lack of awareness among people about anxiety people suffer from serious mental health disorder and very few undergo through treatment. The need of the hour is taking preventive measure which can prevent the risk factors before it becomes a serious mental health issue. In such case, music can be used as an effective therapeutic tool for both promotion and intervention for individuals and group. Formal music education can play a great role in managing mental health and reducing the risk factors of anxiety and other mental health issues. The mental health policy makers can use the findings of this study and recommend music education for promotion and intervention of group mental health. This study also suggests further large scale intensive research in this area to investigate and identify the promotional procedure using music for managing anxiety level.

## References

- Aldridge, D. (1994). An Overview of Music Therapy Research. *Complementary Therapies in Medicine*, 2, 2004-08
- Aldridge, D. (2000). Music Therapy in Dementia care: More New Voices, Psychology. Corpus ID: 142413196. Available from <https://www.semanticscholar.org/paper/Music-therapy-in-dementia-care-%3A-more-new-voicesAldridge/e0841125d87fc3a7478e2ab0011bf1cb8547c8ee>
- Bharadwaj, R. (2017). Effect of Music Therapy on Stress and Anxiety of University Students. *International Journal for Innovative Research in Multidisciplinary Field*, 3(5), 10-14
- Bisson, K.H. (2017). The Effect of Anxiety and Depression on College Students' Academic Performance: Exploring Social Support as a Moderator. *Digital Commons @ ACU, Electronic Theses and Dissertations*. Paper 51.
- Cherry, K. (2019). How Listening to Music can have Psychological Benefits. Available from [www.verywellmind.com/surprising-psychological-benefits-of-music-4126866/](http://www.verywellmind.com/surprising-psychological-benefits-of-music-4126866/)
- Cuypers, K., Krokstad, S., Holmen, T.L., Knudtsen, M.S., Bygren, L.O. & Holmen, J. (2012). Patterns of Receptive and Creative Cultural Activities and Their Association with Perceived Health, Anxiety, depression and satisfaction with Life among Adults. *Health Journal of Epidemiology and Community Health*, 66(8) Available from <http://dx.DOI.org/10.1136/jech.2010.113571>
- Ferrano, K. (2021). 7 ways Music Can Help Reduce Stress and Anxiety. <https://www.ascap.com/help/wellness/7-ways-music-can-help-reduce-anxiety-and-stress>
- Ferrer, A.J. (2007). The Effect of Live Music on Decreasing Anxiety in Patients Undergoing Chemotherapy Treatment. *Journal of Music Therapy*, 44(3), 242-255
- Finn, S., & Fancourt, D. (2018). The biological Impact of Listening to Music in Clinical and Non-clinical Settings : A Systematic review. *Progress in Brain Research*, 237, 173-200
- Göçet-Tekin, E. (2014). Üniversite Öğrencilerinin Psikolojik İyiliği Olma Duygusal Zeka Ve Sosyal İyiliği Olma Düzeyleri Arasındaki İlişkilerin İncelenmesi. Doktora Tezi, Sakarya Üniversitesi Eğitim Bilimleri Enstitüsü Eğitimde Psikolojik Hizmetler Anabilim Dalı Psikolojik Danışmanlık Ve Rehberlik Bilim Dalı. pp9-12./
- Habe, K. (2010). Neuropsychopathology of Music – A Rapidly Growing Branch of Psychology. *Horizons of Psychology*, 19(1), 79-98.
- Harney, C., Johnson, J., Bailas, F. & Havelka, J. (2022). Is Music Listening an Effective Intervention for Reducing Anxiety? A Systematic Review and Meta-analysis of Controlled Studies. *Musicae Scientiae*, 1-21. Doi:10.1177/10298649211046979
- Haigh, C., & Jarvis, S. (2017). Can Anxiety Cause Depression? Available from <https://patient.info/news-and-features/can-anxiety-cause-depression>
- Juslin, P. & Sloboda, J. (2010)(Eds). *Handbook of Music and Emotion: Theory, Research, Applications*, Oxford and New York: OUP, 2-14
- Kerr, T., Walsh, J., & Marshall, A. (2001). Emotional Changes Processes in Music Assisted Reframing. *Journal of Music Therapy*, XXXVIII (3), 193-211
- Kessler R.C., Aguilar-gaxiola, S., Alonso, J., Chatterjee, S., Lee, S. & Ormel, J. (2009). The Global Burden of Mental Disorder: An Update from the WHO World Mental Health Survey. *Epidemiol Psychiatric Society*, 18, 23-33
- Lai, H.L., Hwang, M.J., Chen, C.J., Chang, K.S., Peng, T.C. & Chang, S.M. (2008). Randomised Controlled Trial of Music on State Anxiety and Psychological Induces in Patients Undergoing Root Canal Treatment. *Journal of Clinical Nursing*, 17(19), 2654-60

- Lee, J & Thyer, B. (2013). Does Music Therapy Improve Mental Health in Adults? A Review. *Journal of Human Behaviour in the Social Environment*, 23, 597-609
- Lee, O.K., Chung, Y.F., Chan, M.F., & Chan, W.M. (2005). Music and Its Effect on the Physiological Responses and Anxiety Levels of Patients Receiving Mechanical Ventilation: A Pilot Study. *Journal of Clinical Nursing*, 14(5), 609-20, DOI: 10.1111/j.1365-2702.2004.01103.x. PMID: 15840076
- Manjunatha, M., Jayasankar, P., Suhas, S., Rao, G., Gopalkrishna, G., Varghese, M. & Benegal, B. (2022). Prevalence and its Correlates of Anxiety Disorders from Indian National Mental Health Survey 2016. *Indian Journal of Psychiatry*, 64(2), 138-142
- McCall, S. (2017). Music Mental Health Go Hand in Hand. *Juan Articles*. Available from [https://www.theshorhorn.com/life\\_and\\_entertainment/music-mental-health-go-hand-in-hand/article\\_40ac3870-b099-11e7-be75-8313f395edb2.html](https://www.theshorhorn.com/life_and_entertainment/music-mental-health-go-hand-in-hand/article_40ac3870-b099-11e7-be75-8313f395edb2.html)
- Miranda, D., Gaudreau, P., Debrosse, R., Morizot, J., & Kirmayer, L. J. (2012). Music listening and mental health: Variations on internalizing psychopathology. In R. A. R. MacDonald, G. Kreutz, & L. Mitchell (Eds.), *Music, health, and wellbeing*, Oxford University Press. 513–529 Available from <https://DOI.org/10.1093/acprof:oso/9780199586974.003.0034>
- Murrock, C.J. & Higgins, P.A. (2009). The Theory of Music, Mood and Movement to Improve Health Outcome: Discussion Paper. *Journal of Advance Nursing*, 65(10), 2249-2257
- Nilsson, U. (2008). The Anxiety and Pain-Reducing Effects of Music Interventions: A Systematic Review. *AORN JOURNAL*, 87(4), 780-807
- Nima, A. A., Rosenberg, P., Archer, T., & Garcia, D. (2013). Anxiety, affect, self-esteem, and stress: mediation and moderation effects on depression. *PloS one*, 8(9), e73265. Available from <https://DOI.org/10.1371/journal.pone.0073265>
- Osmanoglu, B.E. & Yilmaz, H. (2019). The Effect of Classical Music on Anxiety and Wellbeing of University Students. *International Education Study*, 12(11), 18-25
- Peretz, I. (2006). The Nature of Music from a Biological Perspective. *Cognition*, 100, 1-32
- Swaminathan, S., & Schellenberg, E.G. (2015). Current Emotion Research in Music Psychology. *Emotion Review*, 7(2), 189-197
- Thoma, M.V., La Marca, R., Bronnimann, R., Finkel, L., Ehlert, U., & Nater, U.M. (2013). The Effect of Music on the Human Stress Response. *PLoS ONE*, 8(8), e70156. DOI:10.1371/journal.pone.0070156
- Tramo, M.J. (2001). *Biology and Music: Basic of the Hemispheres*. Science, 291, 54-56
- Voss, J.A., Good, M., Yates, B., Baun, M.M., Thompson, A. & Hertzog, M. (2004). Srdative Music Reduces Anxiety and Pain During Chair Rest After Open-heart Surgery. *PAIN*, 112, 197-203
- Welch, et al. 2020 Editorial: The impact of music on human development and well-being, *Frontiers in psychology*. 11(1246), 1-4. Available from <https://DOI.org/10.3389/fpsyg.2020.01246>
- World Health Organisation (2017). *Depression and Other Common Mental Disaorders: Global Health Estimate*, Geneva: World Health Organisation
- Wu, S.J. & Chou, F.H (2008). The Effectiveness of Music Therapy in Reducing Physiological and Psychological Anxiety in Mechanically Ventilated Patients. *Journal of Health Psychology*, 13(7), 1912-20
- Yang, C.Y., Chen, C.H., Chu, H., Chen, W.C., Lee, T.Y., Chen, S.G. & Chou, K.R. (2012). The Effect of Music Therapy on Hospitalised Psychiatric Patients' Anxiety, Finger Temperature and Electroencephalography: A Randomised Clinical Trial. *Biological Research for Nursing*, 10(14), 197-206