Online therapy study: The impact of classical music reducing stress symptoms in college students

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ABSTRACT

Examinations are a routine experience for students, including university students. One of the examinations undertaken by students is the end-of-semester exam conducted at the end of each semester to assess their knowledge or skills after undergoing the learning process throughout the semester, and these tests usually determine whether students pass or fail a course. This activity typically imposes pressure on students, even though they go through it almost every semester. The stressful condition preceding these final exams can also be referred to as stress. Some stress can have positive effects on students, but there are also those that have negative effects, and it is this stress with negative effects that needs to be addressed. The aim of this research is to prove the effectiveness of listening to classical music in reducing stress symptoms among students during exams. Twelve male and female students were involved in this research. The results of the data analysis conducted indicate that classical music can reduce stress symptoms with a score of $p < 0.05$.

Keywords: Classical Music, Music therapy, Students, Stress

Introduction

In their role as university students, individuals engage in a range of activities, such as attending lectures, completing assignments, and participating in off-campus or organisational engagements. Additionally, students often face other responsibilities in their personal lives, such as obligations to parents, family, or friends. These various responsibilities and tasks can sometimes exert pressure on them (Suhandiah, Ayuningtyas, & Sudarmaningtyas, 2021). One significant source of stress for students is the final thesis (Yuda, Mawarti, & Mutmainnah, 2023) or end-of-term exams (Rumalauw, 2021).

Stress can be understood from multiple perspectives, as a psychological disorder (Cénat et al., 2021; Cohen, Janicki-Deverts, & Miller, 2007; Leavy, 1983) or as a common daily experience (Brannon, Updegraff, & Feist, 2018; Gurung, 2018). Various factors may contribute to stress, including major life changes, such as

marriage (Neff & Buck, 2023), grief due to the death of a loved one (Wagner, Hofmann, & Grafiadeli, 2021) or job loss (Lado, Alonso, Cuadrado, Otero, & MartÃnez, 2023). Everyday challenges, such as traffic congestion, uncomfortable living conditions, or academic assignments and exams, also contribute to stress (Koudela-Hamila, Smyth, Santangelo, & Ebner-Priemer, 2022).

Stress is a dynamic condition in individuals, characterised by tension and anxiety, fluctuating with states of calm and relaxation (Wungouw & Lolong, 2017). Positive stress, known as eustress, is associated with psychological well-being, emotional intelligence (Srimulyani, 2020), resilience (Calista & Nugrahaningsih, 2023) and life satisfaction (O'Sullivan, 2011). Conversely, negative stress, or distress, is linked with mental health issues such as depression (Vrshek-Schallhorn, Ditcheva, & Corneau, 2020), anxiety (Matvienko-Sikar et al., 2021; Mogg, Mathews, Bird, & Macgregor-Morris, 1990), and schizophrenia (Gispen-de Wied, 2000; Kirchebner, Sonnweber, Nater, Günther, & Lau, 2022), Distress is also associated with physical health issues (Beach & Whisman, 2012). The aforementioned conditions illustrate the detrimental impact of distress on individuals, including students.

In academic life on campus, students encounter various stressors, and the pressure-laden academic environment often leads to academic burnout (Lin & Huang, 2014). Burnout affects students' behaviour, hindering their studies (Weidner, Kohlmann, Dotzauer, & Burns, 1996) and academic performance (Khan, Altaf, & Kausar, 2013). Therefore, addressing student stress is essential for smooth academic performance and progression. Beyond academic achievement, mental health is a crucial aspect to consider within the teaching and learning environment(Salsabila, 2021), often overlooked by the academic community.

Stress can be influenced by a range of factors, such as self-efficacy, resilience, optimism, motivation, procrastination, and social support (Yusuf & Yusuf, 2020), Besides these psychological variables, stress is also linked to physiological conditions (Klaperski, von Dawans, Heinrichs, & Fuchs, 2013; Rimmele et al., 2007) which in turn relate to calmness (Lischetzke et al., 2021), Calmness has an opposing effect on stress (Grahn, Ottosson, & Uvnäs-Moberg, 2021) and can alleviate anxiety (Tissari, 2019).

Several therapeutic techniques can promote calmness and reduce stress levels. CBT is effective in managing stress related to executive functions (Santos-Ruiz, Robles-Ortega, Pérez-García, & Peralta-Ramírez, 2017), Diaphragmatic breathing also helps to alleviate stress symptoms (Hamasaki, 2020), as do other therapeutic

methods like progressive muscle relaxation (Toussaint et al., 2021) mindfulness breathing, and music therapy (Yıldırım & Yıldız, 2022).

A study by Giordano et al. (2020)) indicated that music therapy can enhance calmness and reduce stress levels. Research on music therapy shows that various types of music are effective in reducing stress symptoms; for instance Ramalingam, Sridevi, Amirtham, Santhakumar, and Saravanakumar (2022) describe music as a remedy for stress. Music therapy can also improve physical health, (Adiasto, Beckers, van Hooff, Roelofs, & Geurts, 2022) such as in heart disease patients (Burrai et al., 2020). Classical music, in particular, is a therapeutic option to reduce stress symptoms, (Upthade & Khandare, 2022) proving effective among students (Chi, 2020; Evangelista et al., 2017; Labbé, Schmidt, Babin, & Pharr, 2007). These research findings illustrate that listening to music, including classical music, can reduce stress symptoms in individuals, including students.

This study aims to investigate the effect of listening to classical music on stress symptoms in students. While the effects of classical music on stress have been widely studied in educational contexts, as mentioned earlier, Mozart's classical compositions are frequently used in educational settings as part of therapeutic interventions (Alalami, Alalami, & Cooper, 2009; Berezutsky, 2022; Yuspitasari & Dalimunthe, 2020). However, these studies were conducted offline, where participants engaged in sessions directly with researchers. The unique aspect of this study is its online implementation; participants undergo the therapeutic process remotely. Online therapy has grown significantly since the COVID-19 pandemic, and its popularity has persisted post-pandemic, although its application is still limited in some therapy contexts, including music therapy.

Online music therapy has previously been implemented for children (Ahessy, 2023), older adults (Molyneux, Hardy, Lin, McKinnon, & Odell-Miller, 2022) dan young adults (Devlin, 2022) each with different background conditions. However, online music therapy for students experiencing stress is relatively unexplored. Therefore, this study seeks to address this gap by examining the effectiveness of online classical music therapy in reducing stress symptoms among students.

Method

This study involved male and female university students aged between 20 and 24 years. As the study was conducted during an even semester, participants were in

their fourth or sixth semester. This group is assumed to represent the most active group of students compared to other cohorts. Generally, students in their second and eighth semesters have less intensive academic activities than those in the fourth and sixth semesters. The study applied specific criteria beyond the general conditions previously mentioned, requiring participants to exhibit moderate, severe, or extremely severe stress symptoms, as measured by the DASS-21. Consequently, the study released an advertisement to recruit participants meeting these criteria.

From the advertisement shared over one week, 21 applicants responded, of whom 12 met the criteria. The participants comprised 2 males and 10 females. The entire research process was conducted online using the Zoom application and Google Forms. Pretest and posttest measurements were distributed via Google Forms, while the intervention process was conducted through Zoom.*us.*

The pretest was conducted concurrently with the participant selection process. During the intervention, the classical music used included Mozart's Sonata for Two Pianos in D Major (7 minutes and 50 seconds) and Symphony No. 40 in G Minor (8 minutes and 4 seconds). After the intervention, participants were again asked to complete the DASS-21 form. Pre-test and post-test score were analysed with paired sample t-test in Jamovi data analysis program.

Result

Based on the pretest measurements, the participants' stress symptoms ranged from a minimum score of 20 to a maximum of 42, with an average score of 29.5. The posttest results showed a decrease, with scores ranging from a minimum of 4 to a maximum of 38, with an average score of 19

Table 1 Pretest and posttest result

SUBJECT	PRETEST	POSTTEST
1	20	4
2	20	4
3	22	8
4	28	14
5	28	14
6	28	16
7	28	18
8	28	18
9	36	26
10	36	32
11	38	36
12	42	38

The data analysis was conducted using Jamovi version 1.6.23, where a normality test was applied to the data, yielding a Shapiro-Wilk normality score of W = 0.883 with p > 0.05. This result suggests that the data in this study are normally distributed.

Table 2 Normality test

			W	p
Pretest	-	post test	0.883	0.096

Following the normality test, the hypothesis was tested using the paired sample t-test method, showing a mean difference between the pretest and posttest scores of 10.5, with p < 0.01. This result supports the study's hypothesis, indicating a significant difference in the online music therapy participants between the pretest and posttest. Thus, the provision of classical music online significantly reduces stress symptoms among students.

Table 3 Paired Sample t-test result

Paired Sample T-Test	Perbedaan nilai rata-rata	p	SE difference	Effect Size
	10.5	< 0.001	1.4	2.17

Additionally, this study demonstrated that providing classical music online to alleviate stress symptoms yielded an effect size of 2.17 based on Cohen's d. This effect size is considered large according to t-test measurements, leading to the conclusion that providing classical music online has a substantial impact on reducing stress symptoms in students.

Discussion

The results of the analysis conducted demonstrate that the provision of classical music online is able to significantly reduce stress symptoms among students. This finding indicates that classical music has effects similar to progressive muscle relaxation, as implemented by Toussaint et al. (2021). A similar technique was also employed by Pelit-Aksu, Özkan-Şat, Yaman-Sözbïr, and Şentürk-Erenel (2021) to reduce stress symptoms among nursing students in practical training in Turkey. Toussaint et al. (2021) also conducted another study on deep breathing techniques, which also promoted relaxation in participants.

The positive results of classical music in reducing stress align with the research by Upthade and Khandare (2022), where listening to classical music was shown to relieve stress and enhance concentration. A study of classical music therapy in Italy provided to heart disease patients demonstrated a reduction in anxiety and depressive symptoms (Burrai et al., 2020). A study conducted in Tunisia among operating room staff in hospitals found that music therapy significantly reduced stress (Kacem et al., 2020).

In addition to being provided as a form of specific self-directed therapy, music therapy yields better effects when combined with other therapies. A study in South Korea on internet and smartphone addiction cases found that CBT therapy accompanied by music showed better scores compared to the group receiving CBT therapy without music (Bong, Won, & Choi, 2021). In the context of stress during the COVID-19 pandemic, a combination of music therapy with yoga was able to significantly reduce symptoms of stress, anxiety, and depression (Vajpeyee et al., 2022). A study conducted among pregnant women indicated that music therapy combined with singing activities had a more positive and beneficial effect on psychological and physiological stress compared to the group that only listened to music (Wulff et al., 2021)

The research findings mentioned above highlight the resilience of music listening therapy in addressing psychological disorders, particularly stress. The provision of online classical music therapy has proven to be as effective as therapy provided offline; however, music therapy shows optimal results when implemented alongside other types of therapy.

This study was conducted with a single experimental group with pre- and post-measurements, which is a limitation as it reduces the validity of the research. Future studies of a similar nature could consider involving two random groups and include follow-up measurements.

Conclusion

Stress is an issue commonly experienced by individuals, including students. There is both positive and negative stress. The negative stress, or distress, experienced by students is generally related to assignments and exams. There are many ways to manage this negative stress, one of which is music therapy. Music therapy comes in various forms, and this study utilised classical music from the

popular works of Mozart. The therapy in this study was administered online, and it was also shown to significantly reduce stress symptoms among students, even with a large effect size on stress symptoms.

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