

RESEARCH ON THE ANXIETY RELIEF OF COLLEGE STUDENTS BY MUSIC THERAPY

Xiaomei An

College of Art, Huzhou University, Huzhou 313000, China

SUMMARY

Background: Stress is an important psychosocial factor influencing college students during their university education, while anxiety and depression are the common consequent mental health disorders. Music can affect our emotions. When people are in different moods, the content and emotions they perceive from music vary significantly. There are numerous cases of music therapy for anxiety or depression abroad. However, in China, relevant clinical practice or specific research is still quite scarce. Therefore, this study analyzes the efficacy of music therapy.

Subjects and methods: All 34 subjects were tested before the experiment, and their SAS standard score and GSES total scale score were recorded. After music therapy of one month and a half, their SAS standard score and GSES total scale score were retested and recorded respectively. Descriptive statistics and correlation analysis were conducted with statistical tools.

Results: After half a month's music therapy, the subjects' SAS standard score decreased ($t = 9.027, P < 0.001$), and the GSES total scale score increased ($t = -8.047, P < 0.001$). After one month's music therapy, the SAS standard score of the subjects continued to decline ($t = 7.985, P < 0.001$), and the GSES total scale score continued to rise ($t = -6.889, P < 0.001$). The average SAS standard score of the students decreased to 57.373, which reached the level of mild anxiety. The average GSES total scale score increased to 2.267, which was significantly higher than before treatment.

Conclusions: Music therapy has a good effect on relieving students' anxiety and increasing self-efficacy, which is worthy of publicity and promotion. Self-efficacy is negatively correlated with symptoms such as anxiety and depression. Compared with male students, female students are more vulnerable to anxiety. Psychological counseling departments in colleges and universities should pay more attention to the psychological problems of female students.

Key words: music therapy - anxiety disorder - college students – education - self-efficacy

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INTRODUCTION

In general, higher education places high demands on student performance, which can lead to excessive stress, anxiety, and even depression and negatively impact their academic performance and personal well-being (Shah & Pol 2020). According to the National Education Statistics of the United States, 70% of new adults in North America have received higher education. Based on this, a statistical survey of individuals with life-long mental illness finds that three-quarters of mental illness occurs before the end of higher education (Prevatt et al. 2015). Mental health problems in students can lead to severe impairment of psychological, social, and emotional functioning, and then increase the risk of dropout, lower educational attainment, and suicidal behavior. In the educational process, stress is an important psychosocial factor for students, while anxiety and depression are common consequent mental health disorders. Music can affect our emotions. Anxiety and depression affect 20 % and 30 % of humans in their lifetime respectively, and they also bring high economic costs (Canu et al. 2017). Although mental health problems are very common among college students, few students receive professional help. In the first half of 2020, due to the COVID-19 epidemic, colleges and universities around the world adopted various network tools to carry out online teaching, and students received online education at home. During the

period of home study when it is impossible to return to school, factors such as the development trend of the COVID-19 pandemic and long-term interpersonal alienation have brought a significant psychological impact on college students. (Teeters et al. 2020). For students in school, the main external manifestations of mental health problems are anxiety and depression. How to understand the anxiety and depression of students and formulate effective strategies has positive significance for the management of students in colleges and universities (Bettmann et al. 2008).

According to domestic and foreign research and some physiological experimental reports, music therapy has a positive effect on the improvement of anxiety and depression symptoms. Specifically, music therapy has physical, psychological, and physiological effects. Physical effect means that through the stimulation of music, the human brain can receive the signal transmitted by the music to generate a sense of excitement and inhibit adjacent pain centers. The improvement of excitement can realize the regulation and control of the body and eliminate physical fatigue (Raglio et al. 2011). The main manifestation of the psychological effect is that the subject can have a deeper understanding of the objective world and establish a correct outlook towards the world, human life, and values through music psychotherapy (Aalbers et al. 2017). At the same time, music can also affect human emotions. Different moods lead to obvious

changes in human responses and emotions to music. The results of physiological effects are more complicated, and they are as follows. First, musical stimulation can affect the release of certain brain transmitters such as acetylcholine and norepinephrine, thereby improving cerebral cortex function (Lauzon 2020). Second, the ventral hypothalamus, limbic system, and brainstem reticular structures are closely related to the autonomic nervous system and are also the controllers of the activities of human internal organs and endocrine glands. Therefore, emotional tension can directly lead to the pathological changes of some internal organs and thus result in mental illness. Music can directly act on the emotional centers of the human brain, such as the hypothalamus and limbic system. It can regulate human emotions and relieve the above symptoms (Gooding & Springer 2020). Third, the auditory center and the pain center are in the temporal lobe of the brain. Music stimulates the auditory center and has an interactive inhibitory effect on pain. At the same time, music can also increase the concentration of pituitary enkephalins, and enkephalins can inhibit pain. Therefore, music has an analgesic effect (Gallagher et al. 2018).

There are numerous studies on music therapy abroad. But in China, clinical practice or specific research related to it is still quite rare. This study selects individuals suffering from anxiety among college students to analyze and study the effect of music therapy.

SUBJECTS AND METHODS

Subjects

The method of field investigation is adopted. In November 2021, 34 students suffering from anxiety disorders from a university in Zhejiang were selected as the research objects. Among them, there were 17 boys (50%) and 17 girls (50%). All students participated in the experiment voluntarily. They were informed and consented to the background and protocol of the experiment.

Tool

Self-rating Anxiety Scale (SAS)

Self-rating Anxiety Scale is compiled by William W.K. Zung. Foreign studies believe that SAS can better reflect the subjective feelings of patients with anxiety tendencies. Anxiety is a common mood disorder in psychological counseling clinics, so SAS has become a commonly used evaluation tool to understand anxiety symptoms in recent years (Dunstan & Scott, 2020).

SAS uses a 4-level score, which mainly evaluates the frequency of symptom occurrence. Its standard is: "1" means no or rarely; "2" means sometimes; "3" indicates most of the time; "4" means almost all of the time. The main statistical index of SAS is the total score. After the evaluation, the scores of 20 items are added together and then multiplied by 1.25 to obtain the

integer part as the standard score. The same calculation can be referred to as the "rough score standard score conversion table". The higher the standard score, the more serious the symptoms. According to the Chinese Norm, the cut-off value of SAS standard score is 50 points, of which 50-59 is mild anxiety, 60-69 is moderate anxiety, and over 70 is severe anxiety (Olatunji et al. 2006).

General Self-Efficacy Scale (GSES)

Self-efficacy is a core concept in Bandura's theory of social cognition. Self-efficacy is different from outcome expectations which refers to individuals' perceptions of the consequences of their actions. But self-efficacy refers to individuals' control or dominance over their actions (Schutte & Malouff 2016). According to Bandura's theory, people with different self-efficacy feel, think, and act differently. In thinking, self-efficacy promotes cognitive processes and performance in a variety of contexts, including decision-making quality and academic achievement. Self-efficacy can strengthen or weaken an individual's level of motivation. Those with high GSES values would choose more challenging tasks. They may set higher goals and stick to them. Once started, those with high self-efficacy put in more effort and persist for longer. They can quickly recover from setbacks. According to the previous research, self-efficacy is often associated with depression, anxiety, and helplessness (De las Cuevas & Penate 2015).

GSES has a total of 10 items, which are in the form of a 4-point Likert scale. Each item is scored from 1 to 4. For each item, the subjects should answer with "completely incorrect", "somewhat correct", "mostly correct" or "exactly correct" according to their actual situation. GSES is a one-dimensional quantity without a subscale. So only the total scale scores are counted. All scores for all 10 items are added together and divided by 10 to get the total scale score. The Chinese version of the GSES has good reliability and validity, with an internal consistency coefficient of 0.87. Its retest reliability at a one-week interval was 0.83. In terms of validity, the correlation between the 10 items of GSES and the total scale score is between 0.60 and 0.77 (Nel & Boshoff 2016).

Statistical process

Descriptive statistics and correlation analysis are performed on the data of this study with SPSS19.0, including independent sample *t*-test, single-factor ANOVA test, and paired sample *t*-test.

RESULTS

Before the experiment, all 34 subjects were tested, and the SAS standard score and the GSES total scale score were recorded. After half a month and one month of music therapy, the SAS standard score and the GSES total scale were tested and recorded again. Statistical

tools were used for data analysis.

During the experiment, the music therapy adopted follows the following three principles:

(1) Principle of systematization. Music therapy requires that music should be played step by step according to the psychological characteristics of the subject. The choice of music should be gradual. For example, music for sadness can be divided into mild, moderate, and severe. The choice starts with mild music and gradually changed into moderate music. The volume should also be gradually increased for the gradual adaptation of subjects.

(2) Principles of learning and inspiration. In the course of music therapy, explanation and guidance are necessary for clients who do not understand music, including the related background and the artistic

conception. Before treatment, subjects can try listening to a piece of music first and appreciate its artistic conception. If the subjects cannot understand the mood of the music, the psychotherapist should provide some explanations to help them understand the meaning of the music.

(3) Principle of Experience. During music therapy, subjects are instructed to experience their own emotions or feelings according to the musical atmosphere.

The subjects are divided into two groups based on gender. According to the experimental data, the independent sample *t*-test is performed on the SAS standard scores of the different gender subjects. Also, the one-way ANOVA test is performed on the GSES total scale scores of the different gender subjects. The results are shown in Table 1 and Table 2.

Table 1. SAS standard *t*-test with independent samples

	<i>t</i>	<i>df</i>	<i>P</i>	Mean difference	Std. error difference	95% CI	
						Lower	Upper
Value	-4.834	32	0.000	-5.117	1.058	-7.273	-2.961

Table 2. GSES total table is tested by single-factor ANOVA

	Sum of squares	<i>df</i>	Mean-square	<i>F</i>	<i>P</i>
Between groups	2.226	1	2.226	23.370	0.000
Within groups	3.048	32	0.095	-	-
Total	5.274	33	-	-	-

According to Table 1 and Table 2, among the 34 test samples in this experiment, there is a significant difference between male and female SAS standard scores ($t = -4.834, P < 0.001$). At the same time, there is also a significant difference between male and female GSES total scores ($F = 23.370, P < 0.001$). This result indicates that, among the participants in this experiment, females generally have higher levels of anxiety than men, and generally had lower self-efficacy and higher levels of in-confidence. To verify whether there is a connection between anxiety level and self-efficacy, a bivariate correlation test is performed on SAS and GSES data, and the results are shown in Table 3.

According to Spearman's Rho test result, SAS standard score is negatively correlated with GSES total score at 0.01 level ($P < 0.001$). This indicates that the higher the level of anxiety, the lower the level of self-

efficacy. Paired sample *t*-test is firstly performed on SAS standard scores before the experiment and half a month after, and secondly on SAS standard scores half a month after the experiment and one month after. GSES scores of each experiment are subjected to the same statistical test. The results are shown in Table 4, and the statistical results are shown in Table 5.

Table 3. Bivariate correlation test

	SAS	GSES
Correlation coefficient	1.000	-0.944**
Spearman's rho	Sig. (2-tailed)	-
	N	34
		34

Note: ** means that correlation is significant at the 0.01 level (2-tailed).

Table 4. *t*-test results of paired samples

	Mean	Std. deviation	Std. error mean	95% CI		<i>t</i>	<i>df</i>	<i>p</i>
				Lower	Upper			
SAS 1-SAS 2	2.265	1.463	0.251	1.754	2.775	9.027	33.000	0.000
SAS 2-SAS 3	2.088	1.525	0.262	1.556	2.620	7.985	33.000	0.000
GSES 1-GSES 2	-0.236	0.156	0.035	-0.278	-0.175	-8.047	33.000	0.000
GSES 2-GSES 3	-0.219	0.162	0.027	-0.262	-0.156	-6.889	33.000	0.000

Table 5. Descriptive statistics

	N	Minimum	Maximum	Mean	Std. deviation	Variance
SAS 1	34	55.00	69.00	61.676	3.997	15.983
SAS 2	34	52.00	68.00	59.411	4.397	19.340
SAS 3	34	50.00	66.00	57.323	4.456	19.862
GSES 1	34	1.10	2.50	1.832	.399	0.160
GSES 2	34	1.20	2.80	2.058	.439	0.193
GSES 3	34	1.40	3.00	2.267	.445	0.199

According to the paired sample *t*-test data, after half a month of music therapy, the SAS standard score of the subjects decreases ($t = 9.027, P < 0.001$), while the GSES total score increases ($t = -8.047, P < 0.001$). After one month of therapy, subjects' SAS standard scores continue to decrease ($t = 7.985, P < 0.001$) and their GSES total score continues to increase ($t = -6.889, P < 0.001$). According to the statistical data in Table 5, after one month of music therapy, the average SAS standard score of the students decreases to 57.373. It reaches the level of mild anxiety. The average total GSES score increased to 2.267, which is close to the normal level. The above data indicate that music therapy has a good effect on relieving students' anxiety and increasing their sense of self-efficacy.

CONCLUSION

This study shows that music therapy has a good effect on relieving students' anxiety and increasing their sense of self-efficacy. Music therapy has no side effects and is easy to operate. With these advantages, it is worth advocating and promoting. Studies have also shown that GSES is positively correlated with self-esteem and optimism, and negatively correlated with anxiety and depressive symptoms (Malinauskas 2017). Besides, the results of this study indicate that female students are more prone to anxiety than male students. During the epidemic period, female students may be more sensitive to the pressure of employment, education, and exams. Psychological counseling institutions in colleges and universities should pay more attention to the psychological problems of female students (Faize & Husain 2021). In addition, the results of this study show that although music therapy can relieve students' anxiety problems, the effect is limited. It is suggested to use it accompanied by other means of relieving anxiety, for example sports. The advantage of sports is that there are relatively no side effects, and it can also improve health, such as weight loss and blood pressure reduction. Studies have found that long-term physical exercise can promote the formation and extension of new blood vessels in the brain, thus improving the brain's ability to concentrate. Compared with those who do not exercise, exercisers have less psychological stress and are less prone to depression. Just 30 to 60 minutes of exercise can reduce psychological stress and 45 minutes of exercise is the optimal duration (Johnston 2021). At the same time, a higher frequency of exercise is not always a better choice. Regardless of the frequency of

exercise, 3 to 5 times per week is the best for optimal mental health (Herguner 2018).

In addition, students' anxiety currently is directly related to the epidemic in most cases. Therefore, colleges must improve the cultivation of students' independent thinking and discrimination ability, and issue in a prompt way clear official notices to avoid students falling into the trap of epidemic rumors (Feng 2021). Meanwhile, they should improve information transparency in terms of the popularization of sciences, the dispelling of rumors, and the release of official consultation in a timely manner. To prevent students from guessing and being confused with specious information, it is of great importance to properly and accurately interpret the official news related to COVID-19 pandemic for the improvement of their judgment and trust. Only by eradicating the spread of rumors can we better prevent the spread of panic and reduce the adverse effects of false news and rumors on students.

Acknowledgements:

Planning project of Philosophy and Social Science in Zhejiang Province, "Research on the art of HuJu (Grant No. 19NJJC075YB)".

Conflict of interest: None to declare.

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Correspondence:

Xiaomei An

College of Art, Huzhou University

Huzhou 313000, China

E-mail: axm125@zjhu.edu.cn