A Study on the Application of Music-assisted Intervention Method in College Students' Mental Health Education

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Abstract

This study used an experimental method to compare the effects of traditional counselling and music intervention methods on college students with low resilience to frustration using 40 on-campus college students from Guangdong Institute of Technology, China. The expected results of the study show that the music intervention method can significantly enhance college students' resilience to frustration and reduce the incidence of anxiety and depression.

The results of this study not only lay a solid theoretical foundation for college students' mental health education, but also provide valuable lessons and insights for college counselling units to carry out college students' counselling practice in the future. With the theoretical support, the counselling practice will be more fruitful and help to improve the psychological quality and resistance of college students.

Keywords: Music Intervention Method; College Students; Mental Health Education

Introduction

Against the background of accelerated social pace and fierce competition, modern college students face great pressure, and their mental health is affected by negative emotions, and problems such as anxiety and depression are becoming increasingly serious. Traditional psychological counselling methods have limitations, and we should think deeply and explore new solutions (De la Rubia et al., 2018). For example, try to integrate innovative methods such as music listening into psychological counselling to make up for the shortcomings of traditional methods. Music intervention can help college students relieve stress and adjust their emotions

in a short period of time, thus improving their mental health. In the face of the challenges of college students' mental health problems, we cannot rely only on traditional methods, but should explore innovative ways such as music intervention methods to provide more effective support for improving college students' mental health.

Research objectives

1. Compare the degree of difference between traditional psychological counselling and music intervention methods in improving college students' ability to resist frustration.

2. To conduct theoretical research on the psychological effects of music intervention methods in college students and apply them in actual practice to effectively prevent and solve the psychological problems of contemporary college students.

Literature Review

Foreign scholars have made important advances in the study of music intervention methods. The following is an overview of the current state of research by some foreign scholars:

Kamioka et al. (2014) conducted a systematic review and found that music therapy had significant clinical efficacy in patients with psychological disorders, improving their emotional state and mental health.

Shahrzad and Amirhooshang (2015), in a music therapy trial among cancer patients, found that music listening significantly reduced anxiety levels and enhanced patients' emotional management.

In their literature review, Bernardo et al. (2015) stated that music listening as a non-pharmacological intervention has wide applications and positive impacts in the field of mental health.

Bradt, Dileo and Magill (2016) in their article entitled Improving Psychological and Physical Outcomes through Musical Interventions provided a systematic review and analysis of existing research examining the effectiveness of musical interventions in improving psychological and physical outcomes for cancer patients.

Magee, Clark, and Tamplin (2017), in their article entitled Music therapy for individuals experiencing trauma: a literature review and clinical practice recommendations, provided a literature review of the use of music therapy in individuals experiencing trauma and provided clinical practice recommendations.

Chanda and Levitin (2013) investigated the effects of music on neurochemistry in their article entitled The Neurochemistry of Music. The literature outlines the interactions between music and neurotransmitters, hormones, and immune factors, demonstrating that music can produce emotional and cognitive effects by modulating various neurotransmitters, hormones, and immune factors. These findings contribute to a better understanding of how music affects the human brain and body and provide a basis for further research into music therapy and intervention.

Bittman and Bruce (2019) explored the effects of music on stress and discussed music therapy mechanisms in their article entitled Music and Stress. The authors propose that music produces its effects by stimulating areas of the brain associated with emotion and memory. Additionally, music can alleviate stress by eliciting a relaxation response in the body, diverting attention, and providing emotional support.

In conclusion, foreign scholars have made important progress in the study of music intervention methods. They have proved the effectiveness of the music intervention method in improving mood and enhancing resistance to frustration. These findings are consistent with the results of domestic scholars, thus providing comprehensive and reliable support for the application of music intervention methods in the field of mental health education. (Blood & Zatorre, 2001).

Research Conceptual Framework

Listening to music as a psychological intervention can improve emotional management skills and psychological well-being by infecting, intervening, and improving an individual's mood (Fancourt & Finn, 2019). Although there are differences in the definition of music listening among academic groups from different cultures, they all recognize the role of music in helping people achieve their health goals. Psychological theory-based approaches to music listening help individuals regain confidence and achieve a healthy mind through the physiological and psychological responses that music produces and the impact that musical perceptions have (Miranda et al., 2016).

Traditional psychological intervention methods include lectures, group counselling and individual counselling. Emotional management ability is closely linked to resilience, which refers to an individual's ability to withstand stress and get out of trouble when facing setbacks, as well as having the tolerance to avoid psychological and behavioral disorders. This ability varies according to physiological conditions, personality characteristics, self-perception and

other factors. Harrower M. Asses J defined frustration tolerance as an individual's ability to cope with and adapt to frustration, while Neil Harrington categorized it into four dimensions: discomfort tolerance, entitlement, emotional tolerance and achievement, and created the Frustration Tolerance Scale. In Asian populations, a revised version of the FDS-CR scale was used to assess frustration tolerance.

The music intervention method proposed in this thesis aims to improve the psychological quality of individuals by increasing frustration tolerance. In a musical atmosphere, people can achieve better moods, more stable emotions, and healthier physical and mental states, thus improving their resilience to frustration and enhancing their psychological quality.

Hypothesis

H1: Traditional counselling has a positive effect on college students' resilience to frustration.

H2: Traditional counselling coupled with music-assisted intervention has a positive effect on college students' resilience to frustration, thereby improving their psychological quality.

Research methodology

This study was explored using three research methods: experimental method, literature analysis method and questionnaire method. Also, regression analysis was performed using SPSS software to improve the reliability and validity of the data.

Objects of the study

This study used a random sampling method with students from Guangdong Polytechnic University in China as the main research subjects. In the pre-study, 200 students with different gender, major and grade backgrounds were randomly selected and administered the Frustration Resistance Scale questionnaire. According to the screening criteria, 40 students with equally low anti-frustration ability were finally selected as experimental subjects. These subjects were divided into two groups, one including 20 students as the control group and the other 20 as the experimental group.

In this study, the Chinese Revised Version (FDS-CR) of the Frustration Tolerance Scale (Wang Juanjuan, Wang Xiang, et al., 2014), which has high reliability, was chosen. The scale is the internationally used SDS Self-Rating Depression Scale (SDS) developed by William W.K.

Zung in 1965, and the Self-Rating Anxiety Scale (SAS) developed by Zung, a Chinese-American professor, in 1971. as the main questionnaire instrument.

In order to assess the psychological status of the experimental subjects more accurately, the revised Frustration Tolerance Scale (FDS-CR) was used, which has high reliability and validity, and can effectively measure the individual's ability to cope with frustration. At the same time, the SDS Depression Self-Rating Scale and the SAS Anxiety Self-Rating Scale were also included, which are internationally recognized psychological assessment tools for assessing individuals' depression and anxiety, respectively.

The gender, number and current psychological status of the sample of this study were characterized as Table 1, respectively.

Table 1 Basic information about the subjects of the study

Gender	Mentality	Control Group	Experience Group
Female	Poor Anti Setback Ability	10	10
Male	Poor Anti Setback Ability	10	10

Preparation of research tools

In the present study, the questionnaires related to this study were selected from the Chinese revised version of the Frustration Tolerance Scale (FDS-CR), which has high reliability, the internationally used Self-Rating Depression Scale (SDS) developed by William W.K. Zung in 1965, and the Anxiety Self-Rating Scale (ASRS) developed by Chinese-American Professor Zung in 1971. Zung's Self-Rating Anxiety Scale (SAS).

The revised Chinese version of the Frustration Tolerance Scale consists of 26 questions, including two main parts, the first part is a total of two questions on the basic information of the individual, and the second part of the questionnaire consists of six questions on each of the four dimensions of frustration tolerance: "Avoiding Difficulties", "Entitlement", "Emotional Tolerance", and "Achievement", as shown in the Table 2.

Table 2 Distribution of the dimensions of the revised Chinese version of the frustration tolerance scale

Anti frustration ability dimension	Title serial number
Avoiding Difficulties	6/14/15/18/19/23
Emotional Tolerance	4/8/13/17/21/25
Achievement	3/5/9/11/22/26
Rights	7/10/12/16/20/24

The Anxiety Self-Rating Scale consists of 20 questions to reflect the subjective feelings of anxiety of an individual. By rating these questions, it is possible to determine the severity of anxiety and how it changes. The scale is intended for use in adults with an anxiety condition. The SAS uses a 4-point rating system to rate the frequency of the defined symptoms in an individual.

The Depression Self-Rating Scale is an instrument for measuring depressive states, developed by William W.K. Zung, a professor at Duke University in the United States in 1965-1966. The scale contains 20 questions covering psychotic-affective symptoms, somatic disorders, psychomotor disorders, and depressive mental disorders. Each question is rated on a four-point scale. The scale is easy to use and provides a visual representation of the subjective feelings of depressed patients. It is suitable for individuals with depressive symptoms in ad

Selection of experimental samples

In this study, 200 students were randomly selected as a sample from Guangdong Polytechnic Institute in China to conduct a preliminary questionnaire on anti-frustration ability. By filling out the frustration resistance scale, 40 students with low frustration resistance were selected as experimental subjects, of which 50 per cent were male and 50 per cent were female. In addition, 10 male and 10 female students totaling 20 were randomly selected from the experimental subjects as the control group.

The specific operation included the following five steps: in the first step, based on the results of the Frustration Resistance Scale, 20 male and 20 female students totaling 40 college students with low frustration resistance were identified. In the second step, 10 male and 10 female students totaling 20 were selected from these 40 as a sample of college students with low frustration resistance. In the third step, these samples were divided into two groups, the control group and the experimental group. In the fourth step, during the next 5 weeks, the 20 students in the experimental group were intervened with music listening method and another 20 college students with low frustration tolerance were used as the experimental control group. In the fifth step, after 5 weeks, the differences in the psychological state of the two groups of students were compared and the effects of the music intervention method on the psychological state of the two groups were analyses.

Programme of the experiment

This study conducted a comparative test by setting up a control group and an experimental group. The subjects in the control group only received traditional counselling

and did not listen to music. The experimental group, on the other hand, received traditional counselling and also listened to music. The details of the experimental content and time schedule are shown in Table 3.

At the beginning of the experiment, 40 experimental subjects need to fill in the questionnaire of anxiety and depression of college students. And at the end of the experiment, they need to fill out the Student Anxiety and Depression Questionnaire and the College Student Frustration Resistance Questionnaire again. This can assess the effect of the experiment by comparing the results of the two questionnaires.

Table 3 Timetable for the experimental programme

	first week	second week	third week	Fourth week	Fifth week
control subjects	Not listening to the music.	Mental Health Theme Class Meeting	Not listening to the music.	Mental Health Theme Class Meeting	Not listening to the music.
experimental group	Listening to music	Mental Health Theme Class Meeting	Listening to music	Mental Health Theme Class Meeting	Listening to music

Validity of the questionnaire

The questionnaire of this study is based on theory, referring to the questionnaire content and measurement items of authoritative scholars, and has been modified for the characteristics of the experimental subjects in East Asia. The internal consistency reliability of the FDS-CR reaches 0.86, and the validity of the validity scale correlation reaches 0.91, and the revised version of the Chinese version of the FDS has a high level of reliability and validity, and it can be used as a valid tool for the study of frustration tolerance in China. Therefore, the instrument used in this study should be able to meet the content validity requirements.

Research Results

Analysis of the total sample

In this study, the random sampling method was used in the preliminary stage, from which 200 students were selected for the completion of the Questionnaire on Resilience of

College Students to Frustration. With the data collected, the sample was analyses for normality and the results are presented in Figure 2 and Table 4.

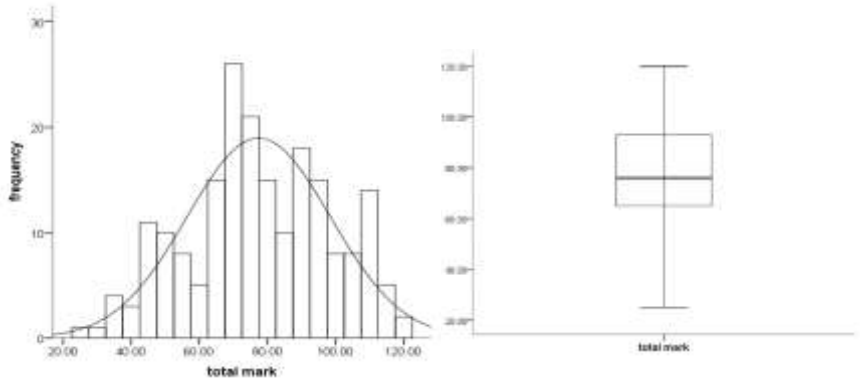

Figure 2 Total Sample Frequency Distribution Plot and Box Plot

Table 4 Results of Normal Analysis of Resilience Values for the Total Sample

	Mean±Standard Deviation （M±SD）	Mean 95% confidence space		Significance (Kolmogorov-Sminov A)
Total value of anti-setback ability	77.43±21.05	Ceiling	Floor	0.200*
		80.36	74.50	

According to Figure 2, we can observe that the histogram of the frequency distribution of the total value of frustration resistance of the 200 university students in this study shows a nearly inverted "bell shape". At the same time, the left and right sides are symmetrical. This distribution characteristic indicates that the sample data conforms to the trend of normal distribution on the whole.

In addition, in Table 4, we can see that the data were tested for normality by the Kolmogorov-Smirnov test (referred to as the K-S test) and a p-value of 0.200, which is greater than 0.05, was obtained. According to the usual level of significance (e.g., α = 0.05), this means that we cannot reject the original hypothesis that the selected total sample data can be considered to follow a normal distribution.

In conclusion, based on the histogram of frequency distribution and the results of the K-S test, we can conclude that the selected total sample obeys a normal distribution in terms of the total value of resistance to frustration. This result provides a basis for the reliability of subsequent statistical analysis methods and increases the credibility of the research results.

Analysis of differences before and after the experiment

Comparison of differences in anti-frustration ability of students in the control group before and after the experiment

Table 5 Control group pre- and post-test scores for resilience to frustration (n=20)

Dimension	Before experiment	After experiment	t	p
Total value	48.85±4.67	71.75±5.04	17.51	0.000
Avoiding Difficulties	2.07±0.39	2.98±0.33	8.345	0.000
Emotional Tolerance	2.06±0.34	3.00±0.45	14.364	0.000
Achievement	1.80±0.32	2.95±0.57	11.809	0.000
Rights	2.25±0.52	3.04±0.48	17.512	0.000

After 5 weeks of the experiment, paired samples t-tests were conducted on the total score of the control group's resilience to frustration as well as the pre- and post-test scores of each dimension. The results are shown in Table 5, with t-values of 17.51, 8.345, 14.364, 11.809, and 17.512, respectively, and p-values less than 0.05.

Based on the results of the t-test, it can be concluded that in the post-test scores of the experiment, the students' scores on the total dimension of resilience as well as on each of the dimensions were significantly higher than the scores before the experiment. This indicates that there is a significant difference between traditional counselling before and after the experiment

The paired samples t-test enables us to compare the performance of the same group of students in terms of their anti-frustration ability at different points in time and to determine whether the changes are statistically significant. According to the results, in this experiment, after the traditional counselling experiment, the students made significant progress in the area of anti-frustration ability.

Comparison of the difference in anti-frustration ability of students in the experimental group before and after the experiment

Table 6 The value of anti-frustration ability in the experience group before and after the experiment （n=20）

Dimension	Before experiment	After experiment	t	p
Total value	45.40±10.10	100.00±10.34	8.271	0.000
Avoiding Difficulties	1.87±0.52	4.32±0.51	8.271	0.000
Emotional Tolerance	1.88±0.51	4.15±0.45	8.345	0.000

Achievement	1.83±0.53	4.08±0.58	14.364	0.000
Rights	2.01±0.45	4.12±0.38	11.809	0.000

After 5 weeks of experimenting with the music intervention method, paired samples t-tests were conducted on the total score of the experimental group's resilience as well as the pre- and post-test scores of each dimension. The results are shown in Table 6, with t-values of 8.271, 8.271, 8.345, 14.364, and 11.809, respectively, and p-values less than 0.05.

Based on the results of the t-test, the following conclusions were drawn: in the post-test scores of the experiment, the students' scores on the total dimension of frustration resistance as well as on each of the dimensions were significantly higher than the pre-test scores. This indicates that there is a significant difference in counselling through music intervention methods before and after the experiment.

The paired samples t-test enables to compare the performance of the same group of students in terms of their resistance to frustration at different points in time and to determine whether the changes are statistically significant. According to the results, in this experiment, after experimenting with the music intervention method, the students made significant progress in the area of anti-frustration.

Conclusion

traditional psychological counselling that has a positive effect on college students' resilience to setbacks

This study used the traditional psychological counselling method, which is mainly based on mental health lecture counselling. This study improves college students' resilience to setbacks to a certain extent. Mental health lectures can increase college students' self-consciousness about eliminating psychological stress and crises, while group counselling can help college students positively cope with the adverse emotions caused by setbacks (Salimpoor et al., 2011). This kind of targeted guidance provides important help in promoting the mental health of college students and improving their resilience to setbacks.

The music intervention method can enhance college students' resilience to setbacks and eliminate the effects of negative emotions.

Music intervention method is a fruitful method to develop college students' anti-frustration ability. Through the charm of music, college students can better cope with the setbacks in life and eliminate negative emotional influences, thus achieving the development of psychological health (Koelsch et al., 2006). In order to make the music intervention method

play a greater role, the school and the society should increase the investment in its research and promote the application of music intervention method in the mental health education of college students, so as to create a better environment for college students to grow up. (Panksepp, 2005).

The combination of traditional psychological counselling and music-assisted intervention can enhance college students' ability to resist setbacks while improving their mental health quality.

In summary, this study used a combination of music-assisted intervention and traditional psychological counselling to achieve positive results in enhancing college students' ability to resist setbacks. Both traditional counselling and music-assisted intervention methods play an important role in the mental health of college students (Schäfer & Sedlmeier, 2010). Therefore, the use of traditional counselling and music-assisted intervention methods should be emphasised in educational management to improve college students' resilience and promote their psychological health.

Suggestion

Expanding the sample size

This study used a smaller sample size for the experiment. In order to enhance the reliability and generalizability of the findings, it is recommended to consider expanding the sample size. By including more college students with different backgrounds, grades, and genders, a better understanding of the effects of music-assisted interventions on the emotion regulation abilities of different groups can be obtained.

Considering individual differences

Each individual has unique perceptions and preferences for music. Future research could explore how individual differences affect the effectiveness of music-assisted interventions. For example, a personalised music intervention programme could be designed according to an individual's preference and taste in music to enhance emotion regulation and alleviate anxiety and depression.

Comparison of different intervention methods

Apart from traditional counselling and music-assisted intervention, there are various other psychological intervention methods available. Future research could compare the differences in effectiveness between different intervention methods and explore whether combining them with music-assisted intervention produces synergistic effects.

By further exploring the above suggestions, we can better understand the impact of music-assisted interventions on college students' emotional regulation and provide more targeted and effective recommendations for mental health education and interventions for this population.

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