

# **The Improvement of Group Music-Sandplay Therapy on Depression in College Students: The Moderating Effect of Personality Traits**

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**Abstract:** This study combined music therapy and sandplay therapy to propose an integrated group music-sandplay therapy, and verified that it has significant advantages compared with conventional group music therapy and group sandplay therapy in improving the depression state of college students. This study also found that the personality traits of openness and extroversion in the Big Five personality theory had a significant impact on the therapeutic effect of the three types of therapy, and played a moderating effect between the treatment method and the therapeutic effect.

**Keywords:** Group Music-Sandplay Therapy, College Students, Depressive State, Personality Traits, Moderating Effect

## **1. INTRODUCTION**

Depressive state is a psychological state between "depressed mood" and "depression". Its main symptoms include low mood, slow action and thinking, reduced speech and lack of interest. If depressive state lasts for a long time, the internal psychogenic indicators and external behavioral functions of individual would be affected (Ghasemtabar et al., 2015), and it would be necessary to seek diagnosis and treatment from professional psychotherapist. According to the Survey Report on Mental Health Status of College Students in 2022, the detection rate of depression among college students in China reached 21.48%. In recent years, under the pressure of study, employment and interpersonal relationship, college students have become a high incidence group of depression, and their learning efficiency and individual subjective well-being have been significantly affected (Kang, 2017).

### **1.1 Influence of College Students' Personality Traits on Depression**

The internal factors that affect the depressive state of college students are mainly individual personality traits. In Eysenck personality test (EPQ), high neurotic college students tend to experience more negative emotions and have poor emotional regulation ability, which result to lasting negative emotional experience. Psychoticism and neuroticism are significantly

positively correlated with college students' depressive mood, while extraversion and concealment are significantly negatively correlated. College students with high extraversion in the Big Five Personality Scale (OCEAN) are more likely to get social support, so the risk of depression is lower (Cambra, 2019); High conscientiousness college students have increased the risk of depression because of their stricter demands (Broder-Fingert et al., 2017; Nicholson et al., 2008). In addition, borderline personality traits may be an independent risk factor for relapse of depression in college students (Gold et al., 2004).

## 1.2 The Improvement of Depression State in College Students by Group Music-Sandplay Therapy

In recent years, group sandplay therapy has been widely used in mental health education of college students in China. Under the background that becoming more and more the focus of social attention and debate, telling their experiences and expressing their emotions and ideas through sandplay seems a good way for college students to solve psychological problems and relieve psychological pressure (Yinger & Gooding, 2014). Group sandplay emphasizes the interaction between members, through mutual support and encouragement to reduce their psychological pressure, relieve depression and other bad emotions; meanwhile to enhance the sense of trust and security in interpersonal relationships, reduce inner loneliness, and promote interpersonal communication (Sofield, 2019). Music therapy not only has a good intervention effect on the depression of college students, but also can relieve the anxiety of postgraduate entrance examination, relieve their insomnia, express their annoyance, induce different types of emotional experience, and promote the memory effect. Drum circle music therapy can help college students release pressure better (Green & Drewes, 2013). Using musical neurofeedback stimulation to improve the depression state of college students can achieve a good effect. Piano music therapy can assist professional medical institutions to relieve and improve the symptoms of mild depression (Blanky-Voronov & Gilboa, 2022). Music therapy combined with other psychological counseling and treatment techniques can effectively improve the depressive state of college students (Porter et al., 2017). As a branch of expressive therapy, music therapy and sandplay therapy share many similarities in basic concepts and therapeutic techniques. They both emphasize the activation of multiple senses (especially beyond vision) through synesthesia, and the realization of multi-channel, multi-level (especially beyond language) unconscious expression to achieve therapeutic goals (Allgood, 2005). Group music-sandplay

therapy, which integrates two kinds of treatment methods organically, should have unique therapeutic value in the practice of intervention and improvement of college students' depression state (Southwell, 2016).

### 1.3 Music-Sandplay Therapy and Personality

Individual music preferences are influenced by personality traits. Although there is no significant difference in the overall liking of individuals with different personality types for music, their music preferences are affected by factors such as F, H, L and Q1 in Cattell's 16 Personality Factors Questionnaire(16PF). There is a high correlation between teenagers' music preferences and the indicators of their Big Five personality scale. For example, teenagers who like rock music have lower scores of conscientiousness and higher scores of openness (LaGasse, 2014); teenagers who like classical music scored higher on agreeableness, conscientiousness and openness, but lower on neuroticism; teenagers who like hip hop and pop music scored higher on extraversion and agreeableness. If the students' preference for music is investigated in advance and music activities are designed accordingly, their participation and enthusiasm can be improved. Therefore, the moderating effect of personality traits must be considered when studying the improvement of group music-sandplay therapy on the depressive state of college students (Fang et al., 2024).

## 2. RESEARCH DESIGN

### 2.1 Research Purpose

(1) To verify whether group music-sandplay therapy is better than music therapy and sandplay therapy in the treatment of depression in college students.

(2) To explore the mechanism of influence of personality traits on the therapeutic effect of different therapies.

### 2.2 Situation of Subjects

According to the results of the annual psychological survey, 40 subjects were selected from the freshmen and sophomores of a university with positive depression indicators. All subjects reported that they were interested in music and liked listening to music, but they had not received systematic music training or participated in regular music activities (such as choir and square dance), and had not participated in sandplay games before.

## 2.3 Research Tools

### 2.3.1 Self-Rating Depression Scale (SDS)

Compiled by W.K.Zung in 1965, it has been proved to have good reliability and validity in Chinese population samples for many years.

### 2.3.2 Big Five Personality Scale (IIP-NEO-120)

Revised by Ge Panpan in 2016, it is suitable for Chinese college students. There are 120 items in the scale, which are divided into 5 dimensions: openness, conscientiousness, extraversion, agreeableness and neuroticism.

### 2.3.3 Orff Instruments

A total of 38 kinds that can be divided into drum resonating instruments, metal resonating instruments, wooden resonating instruments and soundbar instruments. Their share the common features of beautiful timbre, rich and diverse, and can be improvised without prior practice.

## 2.4 Research Process

The subjects were divided into 4 groups with no significant differences in age, depression self-rating score and Big five personality scores according to the pre-test using SDS and IPP-NEO-120. Each group consisted of 10 people (5 males and 5 females). Each group formed a treatment group, and all treatments were conducted in group form; Each group was treated once a week for 4 weeks. After the treatment, all subjects were tested again with SDS (post-test), and the difference between pre-test and post-test (the improvement of depressive symptoms) was used as an indicator to measure the treatment effect. Group 1 was treated with group music-sandplay. The therapist showed the members various Orff instruments and invited them to get familiar with these instruments and improvise together; then all members made a group sandplay based on their observations and feelings during the improvisation. Group 2 and 3 received conventional group music therapy and group sandplay therapy respectively. Group 4 was the control group. The subjects were asked to study quietly without any intervention.

## 3. EXPERIMENTAL RESULTS

### 3.1 Differences in Different Treatment Methods

#### 3.1.1 Intra-Group Comparison

Group music-sandplay therapy played a good role in the treatment of

depressive symptoms ( $p < 0.005$ ), and the Group 2 and 3 also had a certain improvement ( $0.05 < p < 0.1$ ), but the improvement of the control group was not significant.

Table 1: Intra-Group Comparison

Group	Difference	S-W Normality Test	<i>t</i>	<i>P</i>	Cohen's <i>d</i> Effect Size
Music-Sandplay	11.7	0.268	10.128	0.000***	3.203
Music	3.5	0.469	2.15	0.060	0.68
Sandplay	4.0	0.468	2.169	0.058	0.686
Control	1.0	0.212	0.859	0.413	0.272

### 3.1.2 Comparison Between Groups

The difference between the different treatments was compared between the groups and a significant difference was found in the treatment effect ( $F=9.783$ ,  $p < 0.005$ ,  $\eta^2=0.449$ , Cohen's  $f=0.903$ ).

Multiple comparison results showed that there were significant differences in the therapeutic effect between music sand table and other groups ( $p < 0.005$ ).

Table 2: Comparison Between Groups

Comparison	Difference	<i>P</i>
Music-Sandplay & Music	8.2	0.000***
Music-Sandplay & Sandplay	7.7	0.001***
Music-Sandplay & Control	10.7	0.000***
Music & Sandplay	-0.5	0.812
Music & Control	2.5	0.240
Sandplay & Control	3	0.160

### 3.2 Influence of Personality on Effect

The dimensions of Openness and Extraversion in the Big Five personality model have a significant influence on the effect of three therapeutic methods: music-sandplay, music and sandplay.

Table 3: Influence of Personality

Group	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism
Music-Sandplay	0.001***	0.142	0.001***	0.710	0.358
Music	0.016**	0.992	0.013**	0.157	0.924
Sandplay	0.007***	0.947	0.007***	0.987	0.343
Control	0.248	0.301	0.121	0.987	0.509

We calculated the moderating effects of each dimension of the Big five personality model on the effectiveness of different treatment methods, and found that the  $R^2$  difference of each dimension was  $< 0.05$ , and the moderating effects of openness and extraversion were significant.

Table 4: Test of Depression

	$R^2$		Moderating Effect	
	Pre-Test of Depression	Post-Test of Depression	$t$	$P$
Openness	0.506	0.535	-2.423	0.017**
Conscientiousness	0.375	0.378	-0.587	0.558
Extraversion	0.36	0.409	-2.819	0.006***
Agreeableness	0.399	0.4	-0.397	0.693
Neuroticism	0.59	0.6	-1.522	0.131

## 4. DISCUSSION AND CONCLUSION

### 4.1 The Improvement Effect of Music Sand Table Therapy on Depression

The results of this study show that the integrated group music sandplay therapy has a significant advantage in alleviating the depressive symptoms of college students. It combines the characteristics and advantages of music and sandplay therapy, and provides a free and inclusive space for college students to express their inner emotions and ideas through interactive improvisation and sandplay making. This form of therapy not only helps college students better understand their emotions, but also promotes emotional regulation and psychological recovery through creative processes. Conventional group music therapy and group sandplay therapy also have weaker therapeutic effects. There was no significant change in the depression state of the control group, which suggested the necessity of active and effective intervention in the mental health.

#### 4.2 The Moderating Effect of Personality Traits

Although there was no significant difference in the scores of all dimensions of the Big Five personality scale among the groups, their openness and extraversion significantly affected the treatment effect, which may be due to the fact that college students with high extraversion usually have stronger social interaction and emotional expression ability, and are more likely to share and express their emotions by playing musical instruments and making sandplay with others so as to relieve depression more effectively; High openness college students tend to be more active and engaged in groups and are therefore more receptive to and enjoy the form of group therapy. In addition, the openness and extraversion of the subjects are also the moderating variables between the treatment method and the treatment effect, that is, the higher the level of these two subjects, the better the effect of using music-sandplay therapy. This may be due to the fact that college students with high openness and high extraversion have stronger curiosity and desire to explore, and are more willing to try this kind of newfangled and creative form of therapy, and get pleasure and satisfaction from it. This positive experience helps to improve their emotional state and thus better cope with depression; This type of therapy also promotes self-exploration and cognitive restructuring, enabling them to face life's challenges with a more positive attitude.

### 5. RESEARCH LIMITATIONS AND FUTURE PROSPECTS

Although this study demonstrates the unique value of music-sandplay therapy in improving the depression state of college students, there are still some limitations. First, the sample size of this study is small, which may not fully reflect the overall situation of depression in college students. Future studies can expand the sample size to improve the reliability and validity of the study. Second, the treatment period of this study was one month, and future studies can extend the treatment period and do long-term follow-up after the treatment to evaluate the long-term effects of different treatment methods. Factors that affect the persistence of treatment effect can also be explored such as self-management ability and social support system. In addition, future studies can introduce more measurement tools and analytical methods to analyze the performance and experience of individuals with different personality traits during the treatment process; The therapeutic mechanisms and advantages of group music-sandplay therapy, group music therapy and group sand therapy can be further analyzed to provide scientific basis for the development of

personalized depression treatment.

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