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EFFECTS OF DIFFERENT MODES OF MUSIC ON ANXIETY OF THE ELDERLY

Jun Chen[1,2] & Jiajun Zhu[1]

[1]Academy of Music, Jiangxi Science and Technology Normal University, Nanchang 330038, China
[2]Institute of Psychology, Chinese Academy of Sciences, Beijing 100101, China

SUMMARY

Background: *Anxiety is one of the most common psychological symptoms of the elderly. The treatment strategy of routine treatment combined with music therapy can better alleviate the anxiety of the elderly. At present, the research on music therapy focuses on clinical technology and lacks basic theoretical research. The choice of songs is mainly based on the preferences of nurses or patients, with strong subjectivity, lack of analysis of the characteristics of music itself, blindness and randomness. Therefore, more convincing research is needed to further explore the impact of music on the anxiety of the elderly.*

Subjects and methods: *This study makes an empirical study on the effects of music mode and speed on the anxiety of the elderly. Two experiments were designed in this study. Experiment 1 tested the effects of different modes and speed types of music on the emotional pleasure and arousal of two groups of subjects at different ages. Experiment 2 combined with subjective emotion evaluation and monitoring physiological indicators to further study the effects of music with different modes and speeds on the anxiety of the elderly.*

Results*: Compared with minor music, major music can induce positive emotional experience. The subjective anxiety of elderly subjects listening to major music is significantly lower than that of elderly subjects listening to minor music. Compared with slow music, fast music can induce positive emotional experience. The heart rate of elderly subjects listening to slow music is significantly lower than that listening to fast music. The heart rate and finger pulse rate of elderly subjects listening to fast music were significantly lower than those listening to slow music.*

Conclusions*: Through the comparative analysis of the two elements of music mode and speed, it can be seen that the fast type of music in major has a good effect on the awakening of emotional pleasure or the calming of anxiety. Slow type music can slow down the heartbeat. Generally speaking, listening to music can alleviate the psychological and physiological anxiety of the elderly, but not every type of music can play a good effect, so the choice of music is also very important.*

Key words: *music type - music mode - music speed - elderly - anxiety - influence study*

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INTRODUCTION

Influencing factors of music emotion: the factors affecting music emotion are a hot spot in the research of music psychology. Four factors are involved in the whole process of music emotion, including the characteristics of the work itself, performance effect, audience characteristics and listening environment (Guner et al. 2021). At present, most of the influencing factors of music emotion also focus on these factors (Ali et al. 2021). This paper mainly studies the influence of music on anxiety. Starting from the characteristics of music itself, this paper selects two basic elements: mode and speed of music. Influence of music mode: music mode is the creative format of basic rhythm. Mode stipulates that melody development is carried out around 1-3 center tones, which are composed of organized tones with different pitches (Barde et al. 2021). Drzymalski et al. studied the inducing effects of eight music elements on listeners' emotions. The experimental results show that different music modes are related to the arousal level. The arousal level of major is better than minor. Specifically, major music is more likely to stimulate positive emotional experience, and minor music is more likely to stimulate negative emotional experience. Influence of music speed: Music speed is the speed of music, which is determined by the content and style of music, and can be divided into fast and slow (Mozaffari et al. 2020). When the metronome hits 52 quarter notes per minute, it is regarded as slow, and when it hits 108 quarter notes or more, it is regarded as fast. Slow music gives people a far-reaching sense, and people will become sensitive to time and space. In this context, any subtle change will attract people's attention (Gauba et al. 2021). Therefore, the music that often makes people feel sad is slow; The music that makes people feel happy has a relatively light speed (Contreras-Molina et al. 2021).

Music assisted treatment of anxiety: appropriate music can relieve emotion and relax body and mind. In the treatment of anxiety disorder, listening to music also has an auxiliary treatment effect on alleviating the anxiety of the elderly. Amaa et al. clinically used music therapy to assist in the treatment of anxiety patients, allowing patients to select their favorite music and compare it with the control group patients who only received routine treatment. The results show that drug combined with music therapy can effectively alleviate the anxiety symptoms of patients, and the effect is better than drug therapy alone. Alkahtani et al.

pointed out several misunderstandings of current music therapy. Through the way of control test, the two groups of patients were treated with the same drug and assisted with different music therapies respectively, which confirmed that the effect of song discussion group in alleviating anxiety symptoms was better than that of music only group. Ni et al. found that when music was played in the operating room, the systolic and systolic blood pressure and heart rate of awake patients decreased significantly within 30 minutes. Their anxiety was also alleviated by anxiety scale; The anxiety level, heart rate and systolic blood pressure in the group without listening to music increased. It can be seen that the application of background music in the operating room can effectively alleviate patients' anxiety, anxiety and fear, which is not expensive and easy to manage. It is a very effective auxiliary treatment measure.

SUBJECTS AND METHODS

Study setting

At present, many researchers have tried to incorporate music therapy into the treatment of elderly patients, including Alzheimer's disease, senile tumors, senile coronary heart disease, and elderly diabetes. However, according to the existing literature, most of the studies on alleviating the anxiety of the elderly are clinical techniques and lack of basic theoretical research; In the choice of music, it is mainly based on the preferences of nurses or patients, with strong subjectivity, and lack of analysis of the characteristics of music itself. To further explore the impact of music on the anxiety of the elderly, more detailed research is needed.

Design

Experiment 1: use 2 (subjects: young group and old group) × 2 (speed: fast, slow) × 2 (mode: major and minor). The speed and mode music element conditions are the internal factors of the subjects, and the groups (young group and old group) are the inter subject factors. Among them, the subjects in the youth group are college students, who are recruited by means of voluntary registration through advertising and notice. A total of 29 people were recruited, including 13 boys and 16 girls. The average age was 22 ± 1.98 years. No hearing impairment and professional music learning experience. The elderly group was recruited through a community elderly activity center. A total of 27 people were recruited, including 11 males and 16 females, aged 60-78 years, with an average age of 65 ± 3.64 years.

Experimental tools: according to the principle that can best reflect the characteristics of slow in major, fast in major, slow in minor and fast in minor, 20 pieces of music are selected, 4 pieces of each music type, and the other 4 pieces are used as the practice experimental stage. Measurement tools: the self emotion Assessment Scale (SAM) was used in this experiment. The purpose of this experiment is to measure the potency and arousal of the subjects' emotional response to music materials, so the two dimensions of pleasure and arousal in the scale are adopted. Play it to the subjects in completely random order. The interval between each section is 30s. The score is 1-9. The higher the score, the lower the pleasure and arousal. Finally, the data are imported into SPSS 24.0 for statistical analysis. The pleasure scores of the two groups were described and statistically analyzed, and the results are shown in Table 1.

The arousal scores of the two groups were described and statistically analyzed, and the results are shown in Table 2.

Table 1. Valence degree of young group and old group at different speeds and modes (m ± SD)

Evaluating indicator	Group	Fast in major	Slow in major	Minor fast	Minor slow
Valence	Youth category	6.41±1.02	4.62±0.99	5.87±1.25	3.95±0.78
	Elderly group	5.83±0.68	5.16±0.86	5.48±1.34	4.99±1.20

Table 2. Arousal degree of young group and old group at different speeds and modes (m ± SD)

Evaluating indicator	Group	Fast in major	Slow in major	Minor fast	Minor slow
Arousal	Youth category	6.36±1.11	4.44±0.97	6.57±1.20	3.86±1.34
	Elderly group	6.44±0.99	4.00±0.90	6.72±0.98	3.43±0.67

Experiment 2: on the basis of Experiment 1, taking the regulating effect of music on emotion as the starting point, the multi-channel physiological recorder was used to test the physiological responses of elderly subjects in the process of listening to music, so as to explore the differences of the effects of different modes and speed types of music on the emotions of elderly subjects in the state of anxiety. The test indexes include heart rate and finger pulse. This experiment adopts 2 (speed: fast, slow) × 2 (mode: major and minor), and a meditation group was set as the control. At the same time, the subjects

carried out self-assessment of anxiety level in each experimental treatment stage to analyze the subjects' subjective anxiety. A total of 99 people were recruited through various community elderly activity centers. All the subjects were in good physical condition, without emotional mental diseases, and had the ability to independently regulate emotion and normal response, including 41 males and 58 females, aged 60-76 years, with an average age of 66 ± 4.02 years. The subjects were randomly divided into five groups (slow major group, fast major group, slow minor group, fast minor group and meditation group), with 19-20 people in each group.

Experimental tools: according to the test results of Experiment 1, select the section whose arousal degree is closest to the average value of each group among the four groups of music: slow in major, fast in major, slow in minor and fast in minor as the music material of Experiment 2. The heart rate index was measured by multi-channel physiological recorder. In the baseline period, the experiment was officially started after the subjects' physiological indexes were basically stable. First, the calm period was three minutes. After three minutes, the anxiety self-assessment was scored 1-5 points. The larger the number, the higher the degree of anxiety. During the arousal period, the stress mental arithmetic test was used as the inducing material, and the anxiety level was self-rated again after the test. During the adjustment period, each group played different music for 2 minutes, while the meditation group sat for 2 minutes. After that, the anxiety level was self-rated again. During the recovery period, sit still for 2 minutes, and then self-rated the anxiety level again. The collected physiological data were edited and processed offline in acknowledge 4.2 software. If the data were abnormal due to the movement of the subjects, it was regarded as invalid data. Finally, the data of 97 subjects were imported into SPSS 24.0 for analysis. The self-assessment of anxiety level was carried out on the test groups in four time periods respectively, and the self-assessment scores of anxiety level of the five groups in the baseline period, arousal period, adjustment period and post-test period were obtained, as shown in Figure 1.

In addition, the average heart rate and standard deviation of the five groups of subjects in baseline period, wake-up period, regulation period and post test period are shown in Figure 2.

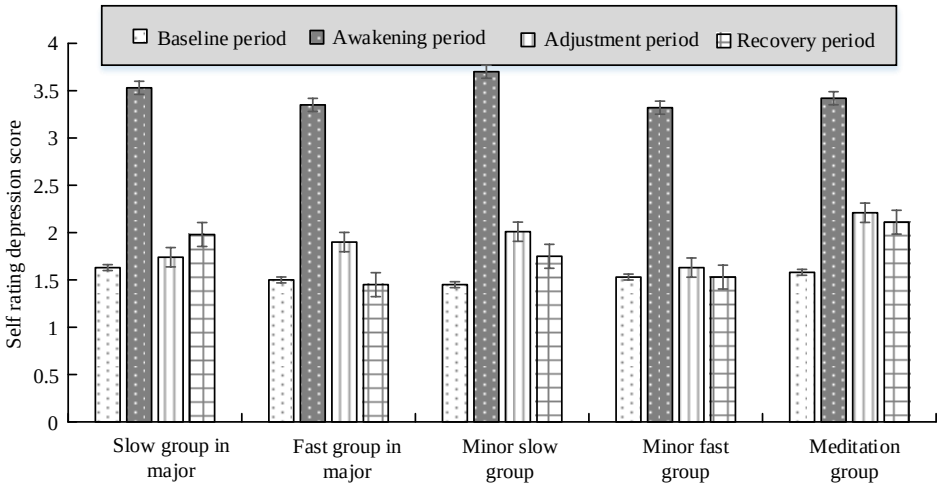

Figure 1. Self-rating anxiety scores (m ± SD) of five groups of subjects under experimental treatment conditions

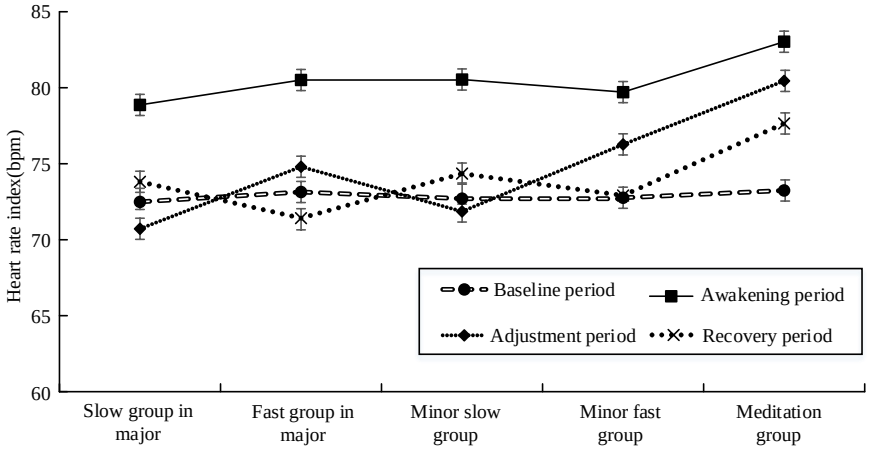

Figure 2. Heart rate (BPM) index (m ± SD) of five groups of subjects under experimental treatment conditions

RESULTS

Experiment 1: comparison of the pleasure degree results of the young group and the old group at different speeds and modes

Taking the mode and speed type of music as the independent variable, the group as the inter subject variable and the emotional pleasure degree as the dependent variable, the repeated measurement ANOVA results show that the main effect of mode type is very significant, that is, the emotional pleasure degree induced by different mode types of music is significantly different ($P < 0.05$), that is, the pleasure degree of major music is significantly higher than that of minor music. The main effect of speed type is very significant, that is, there are significant differences in emotional pleasure induced by different speed types of music ($P < 0.05$), and the pleasure of fast music is significantly higher than that of slow music.

Experiment 1: comparison of arousal results between young group and old group at different speeds and modes

Taking the mode and speed type of music as the independent variable, the group as the inter subject variable and the emotional arousal degree as the dependent variable, the analysis of variance showed that the main effect of mode type was not significant, that is, there was no significant difference in the emotional arousal degree of music of different mode types ($P > 0.05$). The main effect of speed type is very significant, that is, there is a significant difference in the degree of emotional arousal between different speed types of music ($P < 0.05$).

Experiment 2: comparison of anxiety self-assessment scores of five groups under experimental treatment

The average score of anxiety self-assessment of subjects in arousal period is more than 3, indicating that the stress mental arithmetic test has successfully awakened the subjective anxiety of subjects. The differences of anxiety levels among the five groups were further analyzed. The groups were taken as independent variables and the self-assessment scores in arousal period, adjustment period and post-test period were taken as dependent variables. In order to eliminate the impact of individual differences on the experimental results, the self-assessment scores in baseline period were taken as covariates for covariance analysis. The results showed that there was no significant difference in anxiety levels between the groups in arousal period and adjustment period ($P > 0.05$). There was significant difference in anxiety level between the recovery groups ($P < 0.05$).

Experiment 2: comparison of heart rate (BPM) index results of five groups of subjects under experimental treatment conditions

The results of covariance analysis showed that there was no significant difference in heart rate between the groups in the wake-up period ($P > 0.05$), and there was a significant difference in heart rate between the groups in the regulation period and the recovery period ($P < 0.05$) The heart rate of the sedentary group was significantly higher than that of the slow major group and the slow minor group ($P < 0.05$); in the recovery period, the heart rate of the sedentary group was significantly higher than that of the fast major group ($P < 0.05$).

DISCUSSION

Effects of mode types on anxiety in the elderly

In Experiment 1, it is found that there are significant differences in the dimension of emotional pleasure (potency) among mode types. Specifically, the emotional pleasure under the action of major music is significantly higher than that under minor music. Major music can stimulate positive emotional experience more, and there is no significant difference between the elderly and young people. In Experiment 2, by studying the effects of different types of music on the anxiety of the elderly, it was found that in the recovery period after the end of music, the subjective anxiety of the fast music group in major was significantly less than that of the minor music group and the meditation group, which also confirmed that major could stimulate positive emotional experience more. Whether the mode will affect the emotional arousal is still controversial in previous studies. Doan et al. (2019) believe that the effect of music mode on emotion is mainly reflected in the titer dimension rather than the arousal dimension. Michele et al. has different views. The experimental results show that different music modes are related to the arousal level. The arousal level of major is better than minor. Specifically, major music is more likely to stimulate positive emotional experience, and minor music is more likely to stimulate negative emotional experience.

Effects of speed types on anxiety in the elderly

In Experiment 1, it is found that the subjects listening to fast music have significantly higher pleasure than those listening to slow music, and the emotional arousal degree of the subjects under the action of fast music is also significantly higher than that under the action of slow music. Therefore, it can be concluded that fast music can induce positive emotion more. That is, slow music works often cause people to have negative emotions such as sadness and sadness, while fast music works often cause people to

have positive emotions such as happiness and excitement. In addition, experiment 1 also found that the main effect of the old group and the young group was not significant, but the interaction between the speed type and the group was significant. When the speed type was slow, the pleasure degree of the young group was lower than that of the old group, indicating that the old people were more receptive to the slow type of music than the young people. This is related to the fact that elderly subjects prefer quiet, artistic and comfortable sound types (Kannan et al. 2020). After the experimental study, Chahal et al. also proposed that fast music can induce positive emotions more than slow music. However, comparing the fast and slow speed, the trend of the elderly is still consistent with that of the young, and the pleasure induced by fast music is higher (Gilbert et al. 2021). This shows that the emotional perception and response ability of the elderly will not decline with age, and can show the same emotional experience as young people.

CONCLUSIONS

Two experiments were designed in this study. Experiment 1 tested the effects of different modes and speed types of music on the emotional pleasure and arousal of two groups of subjects at different ages; Experiment 2 combined with subjective emotion evaluation and monitoring physiological indicators to further study the effects of music with different modes and speeds on the anxiety of the elderly. The results show that fast music in major has a good effect on arousing emotional pleasure or calming anxiety. Slow type music can slow down the heartbeat. Generally speaking, listening to music can alleviate the psychological and physiological anxiety of the elderly, but not every type of music can play a good effect, so the choice of music is also very important.

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Contribution of individual authors:

Jun Chen: the main writer of the review, completes the collection and analysis of related literature and the writing of the first draft of the paper.

Jiajun Zhu: participated in experimental design and analysis of experimental results, writing and revising thesis.

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Correspondence:
Jiajun Zhu,
Academy of Music, Jiangxi Science and Technology Normal University,
Nanchang, 330038, China
E-mail: yyxy0930@163.com

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OPTIMIZATION STRATEGIES OF PHYSICAL EDUCATION IN COLLEGES AND UNIVERSITIES FROM THE PERSPECTIVE OF COGNITIVE PSYCHOLOGY

Peng Liu[1], Qiying Yan[2] & Chunlei Zhang[3]

[1]Military Sports Department, Changchun University of Science and Technology, Changchun 130022, China
[2]Foreign Language Teaching Department, Changchun University of Chinese Medicine, Changchun 130117, China
[3]Military Sports Department, Changchun University of Science and Technology, Changchun 130022, China

SUMMARY

Background: *The purpose of this article is to realize the optimization of physical education and teaching in colleges and universities, and to improve the quality of physical education and teaching in colleges and universities. Therefore, in the perspective of cognitive psychology, the optimization strategy of college physical education is studied, and the optimization strategy of college physical education is proposed according to the main problems and difficulties through the results of investigation and analysis.*

Subjects and methods: *In this study, using the theories of cognitive psychology, Gestalt theory and cognitive learning methodology, 236 teachers and students in a university were investigated by questionnaire and expert evaluation. Through the results of investigation and analysis, this paper puts forward optimization strategies for the main problems existing in physical education and teaching in colleges and universities.*

Results: *Through questionnaire surveys and expert review methods, the optimization strategies for the current major problems in physical education teaching in colleges and universities are proposed as follows: strengthening the construction of the teaching staff, creating a reasonable teacher structure, organizing regular teacher training; precise physical education teaching content, streamlining and optimizing teaching content, construct characteristic curriculum content, strengthen practical curriculum content, and penetrate cutting-edge curriculum content; optimize physical education teaching methods, reform physical education teaching methods, adopt "Internet +" online teaching methods, and strengthen mixed teaching methods; strengthen teaching quality evaluation, establish an evaluation feedback exchange platform and organize third parties to participate in the evaluation.*

Conclusions: *This paper studies the optimization strategy of college physical education from the perspective of cognitive psychology, puts forward further optimization strategies for the main problems existing in college physical education teaching, ensures the teaching effect of college physical education, improves the teaching quality of college physical education, and provides a certain reference value for realizing the optimization of college physical education teaching.*

Key words: *cognitive psychology - college physical education - physical education teaching - education optimization strategy*

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INTRODUCTION

Cognitive psychology is a new science based on computer science, brain science and psycholinguistics. It uses the viewpoint of information processing to explain people's cognitive processing process (Proctor et al. 2020). This subject takes information processing as the core and compares the human brain with the computer. The emergence and development of cognitive psychology theory has a great impact on the proposal of instructional design theory, model and principle. By constantly absorbing the new achievements of cognitive theory, instructional design theory continues to mature and develop (Ramsey & Ward 2020). Cognitive learning theory is the core content of contemporary cognitive psychology. It mainly studies the learning process from a cognitive point of view. It regards the cognitive learning process as the process of people understanding the world, acquiring knowledge, storing knowledge, sorting, transforming and using knowledge (Ma et al. 2019). The core of cognitive psychology is to explore how to master knowledge and develop intelligence, and how to closely connect education, knowledge and development. Effective teaching is the teaching that teachers successfully cause, maintain and promote students' learning through the regularity of the teaching process, and relatively effectively achieve the expected teaching effect. The main research direction of contemporary cognitive psychology is non intelligence factors. For the research of non intelligence factors, it is fully recognized that interest, motivation, will, habits and other factors have a significant impact on learning, but many people ignore the role of non-intelligence factors (Agarwal & Roediger 2019; Wiener & Pazzaglia 2021). Therefore, developing and cultivating students' non-intellectual factors can help students learn to learn efficiently, and at the same time can greatly promote the development of students' non-intellectual factors. Psychology has a long history of discussing the basic laws of learning and their behavior characteristics. The revealed laws