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From Body Language to Emotional Narrative: An In-depth Analysis of Contemporary Dance Performance and Choreography Methods

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Abstract: Contemporary dance performance and choreography methods still have certain limitations in terms of emotional expression, music fit, and body movement accuracy. Dancers' insufficient understanding of the music structure, poor coherence of emotional narrative, and low matching between movements and rhythms have affected the appeal of dance works and the resonance of the audience. To solve these problems, this paper conducts an in-depth analysis of contemporary dance performance and choreography methods from body language to emotional narrative, and explores how to optimize dance creation through the "music choreography" method. The study arranges dance movements based on music structure (form, melody, rhythm, texture), and combines the performers' emotional expression ability to strengthen the emotional hierarchy and narrative logic of dance. Through experiments comparing the performance effects of different choreography methods, the study uses a variety of methods such as heart rate monitoring, facial expression analysis, questionnaires, and expert scoring to quantify the ability to control the details of emotional expression. The results show that works using the "music choreography" method have significantly improved audience emotional resonance, dance movement fluency, and music fit, especially in terms of movement rhythm matching, emotional expression accuracy, and stage presentation integrity. Music choreography (experimental group) and traditional choreography (control group) show significant differences in multiple dimensions. Regarding the clarity of dance emotional expression, the experimental group scores 88.4%, significantly higher than the control group's 72.5%.

1. Introduction

Dance, as a comprehensive art form, conveys emotions and tells stories through body language, and enhances the audience's immersive experience. Traditional choreography usually relies on the choreographer's experience and artistic intuition, and has a certain degree of subjectivity in music

selection and movement arrangement. However, with the development of technology, choreography methods based on music characteristics have gradually attracted attention. It analyzes the rhythm, melody and emotional characteristics of music to make dance movements more compatible with music, thereby enhancing the expressiveness and viewing experience of the work. In recent years, music-driven choreography methods have developed rapidly with the support of artificial intelligence, computer vision, and music emotion analysis. This study compares the audience feedback, emotion analysis, and dance expression scores of the experimental group (music choreography) and the control group (traditional choreography) to explore whether music-based choreography methods can effectively improve the emotional expression, sense of substitution, and innovation of dance. The research results not only help enrich the theoretical system of dance choreography but also provide new ideas and practical guidance for digital dance choreography and dance teaching.

This study is structured as follows: First, the introduction section outlines the research background, problem statement, and research objectives. Second, the literature review reviews related research results and analyzes the limitations of the current research. Subsequently, the research methods section details the experimental design, data collection, and analysis methods. Next, the experimental results and discussion present and analyze the experimental data to explore the differences in the effects of musical choreography and traditional choreography. Finally, the conclusion and outlook summarize the research findings, point out the contributions and limitations of the study, and propose future research directions.

2. Related Work

In recent years, dance, as a comprehensive art and sports form, has not only played an important role in physical training, emotional expression and cultural inheritance, but has also attracted widespread attention in the fields of health and well-being, educational innovation and technological integration. Carroll et al. explored the impact of Parkinson's disease patients' participation in dance classes and public performances on their perceived well-being. The study found that dance performances can significantly enhance patients' experience of health and well-being [1]. Bastos et al. aimed to explore the impact of gender stereotypes on 11-year-old boys' learning and performance of classic ballet rotations. The study showed that gender stereotype threat may weaken boys' athletic performance and learning outcomes [2]. Boswell et al. explored the experiences, motivations, and key features of inclusive dance performances of dancers with and without disabilities in an inclusive professional dance company. The results of this study suggest that the application of self-determination theory can help understand dancers' experiences and social contexts in inclusive settings, while also emphasizing the importance of building a supportive environment for inclusive dance [3]. Goben et al. aimed to compare the effects of TAGteach and self-assessment video feedback on the accuracy of dance movements among novice dance students. The results of the study showed that movements taught using TAGteach were better than those taught using video self-assessment [4]. Gronek et al. pointed out that dance is closely related to body movements, postures, jumps, turns, and weight transfer, which not only demonstrates the skills of amateur dancers or fully trained professional athletes, but is also accompanied by emotional expression and choreographic narrative[5]. Gwerevende and Mthombeni emphasized the importance of indigenous music, dance, and language in African cultural heritage and proposed a community-based interdisciplinary protection model[6]. Alexander et al. introduced mobile technology into face-to-face teaching to form an integrated teaching model, making technology a teaching partner. The results showed that the technology promoted a more democratic learning environment and diversified activities, but its improvement on student participation and learning

outcomes still needs further research and verification[7]. Arslan and Altan-Atalay explored the impact of perfectionism on the flow experience in dance and collected data from 161 dancers. The results showed that when the pursuit of perfectionism was low, perfectionism concerns significantly reduced the flow experience, but when the pursuit of perfectionism was high, this effect was not obvious [8]. Sarupuri et al. used artificial intelligence to analyze user feedback and summarized six types of motivations: entertainment, fitness, social activities, impact of the epidemic, escapism, and professional needs. The study showed that VR dance can help improve physical and mental health, and provided a reference for the improvement and future development of VR dance applications [9]. Buck-Pavlick discussed teaching strategies for enhancing metacognition through dance writing and collaborative dance creation. Students build a sense of community and enhance their learning experience in dance classes by exploring complex social issues, developing self- and social awareness, and enhancing higher-order thinking and metacognitive abilities [10]. Based on the ecological justice education framework and community dance practice experience, Foster and Turkki advocated promoting the transformation of ecological social consciousness through dance education, and proposed three core principles: celebrating diversity, focusing on physical experience, and practicing collaborative creation to promote an ecologically sustainable dance education model[11]. Although existing research has extensively explored the impact of dance in the fields of health, education, and society, there are still certain limitations in quantitatively analyzing the specific effects of dance on individual psychology and physiology, the influence of gender and cultural factors, and the optimization of dance teaching and experience through technological integration.

3. Method

3.1 Music and Choreography: A Structured Approach to Dance Creation

"Music choreography" is a choreography method in which a choreographer completes the creation of a dance work by drawing on the structure of music. The choreographer can arrange dance movements, design stage space, and promote the development of the theme content based on musical elements such as symphony, melody, rhythm, and musical texture. Successful music choreography requires the choreographer to have profound music analysis ability, rich creative experience and solid dance theory knowledge. In the creative process, the choreographer needs to follow the performance principles of dance art and strive to make the dance highly unified and complementary in terms of music structure, emotional expression and style presentation.

Music choreography not only expands the techniques of dance creation but also promotes the coordinated development of music and dance. Dance choreographers need to conduct in-depth exploration from multiple angles such as music selection, analysis, feeling and application, and combine interdisciplinary knowledge such as drama, film, literature, and folk art to enhance the comprehensiveness and artistry of creation. Correctly grasping the interactive relationship between music and dance, accurately analyzing musical emotions, and converting them into visual dance movements are the keys to achieving music choreography effects.

3.2 The Role of Emotion in Dance Performance

The emotional expression in dance performance is not just a simple projection of emotions, but a transformation and presentation of art. Dancers need to rely on their own performance skills and emotional expression ability to present the inner emotions of the characters to the audience. To this end, dancers not only need solid dance skills but also need to deeply understand and shape the characters so that the emotional expression on the stage is real and vivid.

Emotion in dance is not only an extension of the dancer's own experience but also an important part of character creation. Dancers should fully integrate into the role, deeply integrate their own emotions with the role's emotions, and thus present a shocking dance performance on stage.

3.3 In-depth Analysis of Dance Works

The first step to optimize emotional expression is to deeply analyze the creative background of the dance work, fully understand the dance theme, character characteristics, music arrangement and movement design, so as to accurately grasp the ideological essence and emotional connotation of the work. As the core carrier of emotional expression, the dance role requires the dancer to accurately understand the character's personality, capture the character's inner world, and express the character's emotions through precise dance vocabulary.

Before the performance, dancers need to fully understand the evolution of the relationship between characters and the flow of emotions in the work, and dig deep into every detail during the rehearsal process. At the same time, close communication with the creative team, including the director and composer, helps to discover the potential emotional elements of the work and accurately present its emotional context. In addition, dancers also need to pay attention to emotional interaction with the audience, using dance as a unique artistic language, through expressions, movements, rhythm changes, etc., to guide the audience into the emotional space constructed by the dance and promote deep resonance.

(1) Combination of emotional expression and dance movements

In dance performances, movements are the core means of intuitively expressing emotions and feelings. Fine-tuning of elements such as the power, speed, angle, and relative position of dance movements can significantly enhance the expressiveness of dance. Therefore, performers need to constantly ponder and adjust their movements during rehearsal to make them meet the needs of dance narrative and accurately express the emotions of the performance.

For example, when expressing a happy scene, light jumping movements can be used, but when expressing angry emotions, it is not enough to rely solely on facial expressions. It is also necessary to combine corresponding body movements, such as sad sliding or angry kicking, to enhance the emotional expression tension. In addition, in group dance performances, actors need to maintain consistency in movements and show personalized emotions through facial expressions so that the entire dance presents a natural and smooth emotional connection.

(2) Body movements are the cornerstone of dance creation.

The presentation of dance works not only relies on the depth of ideas but also requires solid body movements as support. Different body movement combinations can shape different styles of works, giving the dance a unique rhythm and expressiveness. Only when a dance work has reasonable movement rhythm changes can it construct a complete choreography framework.

For example, in the modern dance work *In a Moment*, the dancers' body movements become the key to success. The two dancers go from entangled to colliding with each other, using the action of rolling on the ground when entangled, and turning and pushing when colliding to show emotional conflict. These movements not only create a sense of time and space interweaving in the work but also strengthen the emotional tension of the dance. As an abstract form of artistic expression, the choreography process of modern dance is to present emotions through body movements. Therefore, it can be said that body movements are the foundation of dance creation and an important medium for expressing spiritual emotions.

4. Results and Discussion

4.1 Experimental Subjects

Twenty professional dancers with a certain dance foundation are selected and divided into two groups:

(1) Experimental group: The "music choreography" method is used to choreograph dance movements based on the musical form structure.

(2) Control group: The traditional choreography method is used, focusing on the independent choreography of dance movements, with music only as background.

One hundred audiences (50 ordinary audiences + 50 dance professionals) are selected as evaluation subjects.

4.2 Experimental Materials

(1) Dance works: Two dance works with similar styles but different emotional expressions (e.g., lyrical dance and dance with strong rhythm) are selected.

(2) Music: Symphonic music with clear structure and modern electronic music are selected for comparative analysis.

(3) Data recording tools: heart rate monitor (to record audience emotional response), expert scoring sheet, and video analysis software.

4.3 Experimental Steps

(1) Dance choreography stage

1) Experimental group: The dance is choreographed according to the music structure (rhythm, melody, texture), and the movements are designed strictly in accordance with the emotional direction of the music.

2) Control group: The dance is choreographed according to the traditional method, without in-depth analysis of the music structure, and the music is only used as background accompaniment.

3) The training period is 4 weeks, with 3 rehearsals per week, each lasting 2 hours.

(2) Dance performance stage

1) Two groups of dancers perform dance under the same stage, lighting and costume conditions.

2) The audience watches the performance and records emotional fluctuations through heart rate monitoring and facial expression analysis.

3) After the performance, the audience gives feedback and the dance expert judges give comprehensive scores.

4.4 Data Analysis

This experiment studies multiple indicators, including the audience's heart rate changes, emotional resonance, sense of substitution, shock, dance expressiveness, facial expression reaction, dance movement and music fit, and the audience's emotional expression clarity, music and movement matching, sense of substitution and innovation ratings of the work.

The experimental data analysis show that different choreography methods have a significant impact on the audience's emotional fluctuations. The highest heart rate of the audience in the experimental group (music choreography) reaches 98.6 ± 4.2 bpm when watching the performance, which is significantly higher than the 89.2 ± 3.8 bpm of the control group (traditional choreography), indicating that music choreography can better arouse the audience's emotions. At

the same time, the heart rate fluctuation range of the audience in the experimental group is 29.7 bpm, which is much higher than the 21.7 bpm of the control group, which means that music choreography is more vivid in emotional expression and can make the audience experience greater ups and downs between high and low emotions. In addition, the average heart rate of the experimental group after watching is 75.4 ± 3.5 bpm, which is a slight increase compared to 72.3 ± 3.1 bpm before watching, while the average heart rate of the control group after watching is only 73.1 ± 3.2 bpm, indicating that the emotional appeal of the music and choreography can continue to affect the audience after the performance. The comparison of the lowest heart rate during viewing shows that the experimental group is 68.9 ± 2.8 bpm, and the control group is 67.5 ± 3.1 bpm, with little difference between the two, indicating that even in relatively slow dance sections, the music choreography can still maintain the audience's emotional attention. Comprehensive analysis shows that music choreography can more effectively mobilize the audience's emotions, allowing them to experience stronger emotional ups and downs during the viewing process, and enhance the immersion and appeal of dance works.

Table 1. Audience heart rate changes (unit: bpm)

Group	Experimental Group (Music-Based Choreography)	Control Group (Traditional Choreography)
Number of Audience Members	50	50
Average Heart Rate Before Viewing	72.3 ± 3.1	71.8 ± 3.0
Peak Heart Rate During Viewing	98.6 ± 4.2	89.2 ± 3.8
Lowest Heart Rate During Viewing	68.9 ± 2.8	67.5 ± 3.1
Average Heart Rate After Viewing	75.4 ± 3.5	73.1 ± 3.2
Heart Rate Fluctuation Range	29.7	21.7

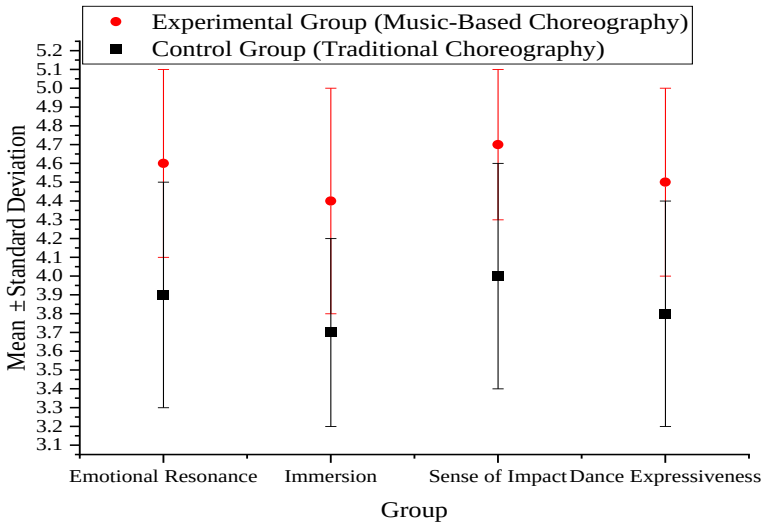

Figure 1. Audience sentiment rating (Likert scale, 1-5 points)

The experimental data analysis in Figure 1 shows that different choreography methods have significant differences in emotional resonance, sense of substitution, shock and dance expressiveness. The audience in the experimental group (music choreography) scores 4.6 ± 0.5 in emotional resonance, which is significantly higher than the 3.9 ± 0.6 in the control group (traditional choreography), indicating that music choreography can better stimulate the audience's emotional resonance and enable the audience to feel the emotional expression of the dance work more deeply. In addition, in terms of sense of immersion, the experimental group scores 4.4 ± 0.6, while the control group scores only 3.7 ± 0.5, showing the advantages of music choreography in enhancing the audience's immersive experience and involvement in the plot. Regarding the sense of shock, the experimental group scores 4.7 ± 0.4, which is higher than the control group's 4.0 ± 0.6, indicating that the music and choreography are more appealing in terms of emotional and visual impact, and could bring a stronger artistic experience to the audience.

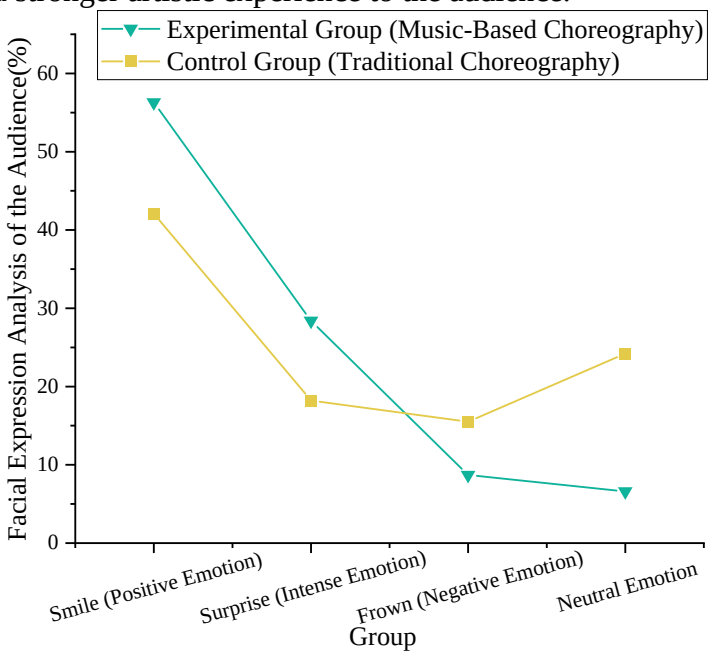

Figure 2. Audience facial expression analysis (unit: %)

Different choreography methods have a significant impact on the audience's emotional response. In terms of positive emotions, the proportion of audience smiling in the experimental group (music choreography) reaches 56.3%, significantly higher than the 42.1% in the control group (traditional choreography), indicating that music choreography can more effectively induce the audience's happy emotions and make them have more positive emotional feedback on the performance. At the same time, in terms of strong emotions (surprise), the proportion of the experimental group audience is 28.4%, much higher than the 18.2% of the control group, indicating that the music choreography is more attractive in visual impact and emotional expression, and can enhance the audience's sense of immersion and shocking experience. In contrast, in terms of negative emotions (frown), the proportion of the experimental group audience is only 8.7%, significantly lower than the 15.5% of the control group, indicating that the emotional transmission of the music choreography is smoother, reducing the confusion and discomfort caused by insufficient emotional expression or disconnected rhythm, as shown in Figure 2.

According to the experimental data in Figure 3, music choreography (experimental group) and traditional choreography (control group) show significant differences in multiple indicators. In terms of movement rhythm matching, the score of the experimental group is 8.9 ± 0.6, significantly

higher than the 7.5 ± 0.7 of the control group, which shows that music choreography is more accurate in the coordination of movement rhythm and music rhythm. In terms of melody fit, the experimental group scores 9.1 ± 0.5, which is significantly higher than the control group's 7.8 ± 0.6, indicating that the music choreography performs better in the integration of melody and dance movements. In terms of emotional expression accuracy, the experimental group scores 9.2 ± 0.5, while the control group scores 7.6 ± 0.6, showing that the music choreography has higher accuracy and appeal in emotional transmission and dance performance. Finally, in terms of comprehensive scores, the experimental group scores 9.0 ± 0.5 and the control group scores 7.7 ± 0.6. Overall, the experimental group performs better than the control group.

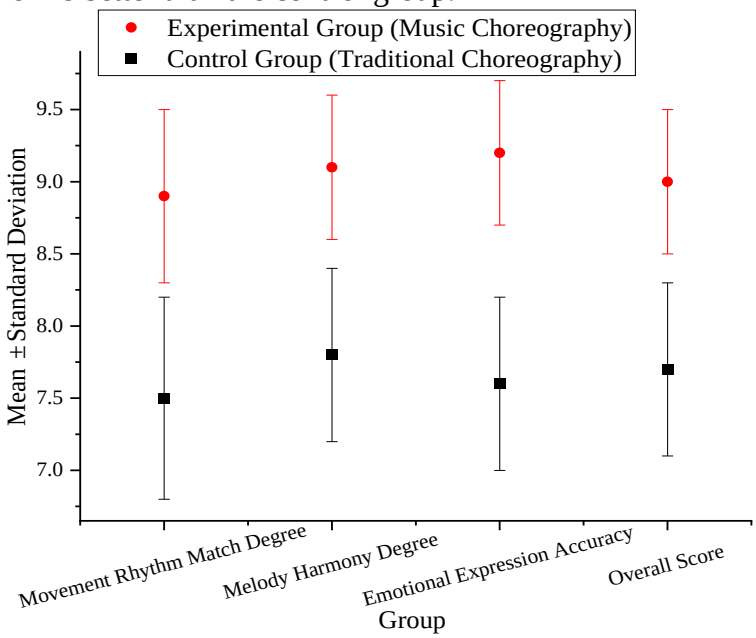

Figure 3. Rating of the degree of fit between dance movements and music (full score 10 points)

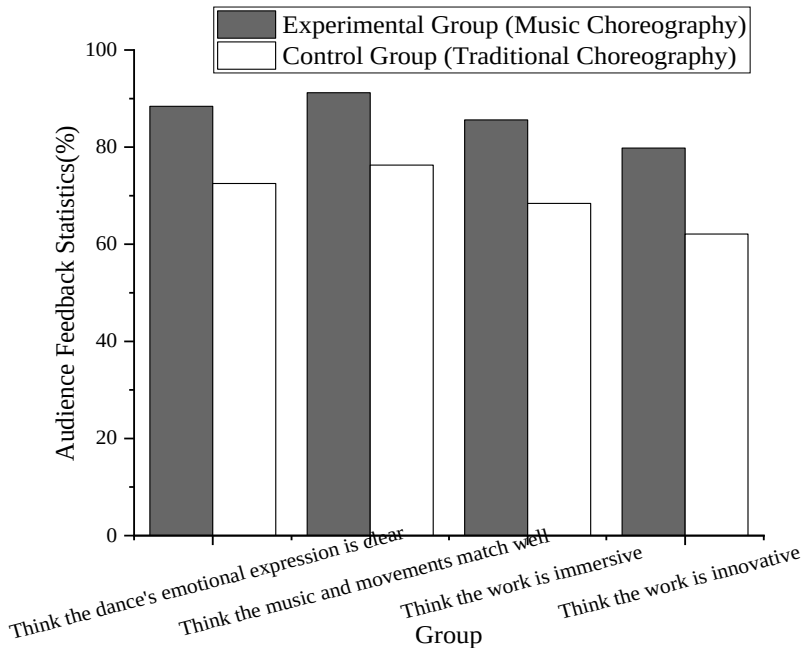

Figure 4. Audience feedback statistics (unit: %)

There are significant differences between music choreography (experimental group) and traditional choreography (control group) in multiple dimensions. First, regarding the clarity of emotional expression in dance, the score of the experimental group is 88.4%, significantly higher than the 72.5% of the control group, indicating that music choreography is more effective in conveying emotional expression. Secondly, the experimental group scores 91.2% in terms of the matching degree between music and movement, which is also significantly higher than the 76.3% of the control group, indicating that the music choreography has a higher matching degree in terms of the integration of movement and music. In terms of sense of substitution, the experimental group scores 85.6% and the control group scores 68.4%, which shows that the audience has a stronger sense of substitution when watching the music choreography works, and can better feel the emotional atmosphere and story expression of the works. Finally, in terms of the innovation of the works, the experimental group scores 79.8% and the control group scores 62.1%. The experimental group also performs better than the control group in terms of the innovation of the works, showing the advantages of music choreography in creativity and expression (as shown in Figure 4).

5. Conclusion

In contemporary dance creation and performance, music choreography provides structured guidance for dance creation, while emotional expression gives dance vitality. In-depth analysis of dance works, accurate expression of emotions, and clever combination of body movements are the core elements of creating excellent dance works. Dancers and choreographers need to constantly explore the organic integration of music, emotions and movements to create dance works that are both artistically profound and touching. This study explores the effectiveness of choreography methods based on music characteristics in dance creation by comparing audience feedback, emotional analysis, and dance expression scores of the experimental group (music choreography) and the control group (traditional choreography). The experimental results show that music-driven choreography is superior to traditional choreography in terms of emotional expression, matching of movements and music, audience involvement and innovation. The audience generally believes that music choreography can convey dance emotions more accurately, make the combination of movements and melody more natural, and thus enhance the overall expressiveness and appeal of dance works. In addition, the results of sentiment analysis further confirm that the experimental group audiences show more positive emotions when watching dance works, such as a higher proportion of smiling, while negative emotions (such as frowning) are relatively less, which suggests that music choreography can more effectively stimulate the emotional resonance of the audience. Audience evaluations are somewhat subjective, and although they are objectively supplemented by sentiment analysis technology, they may still be affected by individual preferences. Therefore, future research can combine more physiological indicators (such as heart rate and brain waves) to further quantify the audience's emotional response.

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