

Examining the Impact of Continuous Dance on Emotions and Factors Influencing Dance Self-Efficacy

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Abstract

Introduction: The COVID-19 outbreak since 2019 seriously affected both physical and mental health, making relief for long-term negative emotions a top priority. While dance behavior in physical education is known to alleviate negative emotions, few researchers explored its effect after sudden crises like COVID-19 and antecedents of sustained dance behavior, i.e., factors influencing dance self-efficacy under such specific conditions. This study conducts empirical research by distributing 307 questionnaires to dance school students from two universities in China and South Korea, aiming to address gaps in related fields and offer guidance to future researchers and practitioners.

Methods: In this study, structural equation modeling was carried out using a questionnaire. Empirical data were collected separately from two universities in China and Korea to examine the relationship between the constructs. Theoretical framework construction utilized the stimulus-organism-response framework and social cognitive theory for an in-depth exploration of the psychological factors affecting dance self-efficacy and whether continuous dance behavior can alleviate negative emotions after a crisis.

Results: The findings reveal that dance self-efficacy emerges as a crucial factor in sustaining individuals' ongoing dance intentions, with dance activities positively impacting mood improvement. Both mastery experience and vicarious experience significantly influence dance self-efficacy, albeit with differing effects. Mastery experience positively enhances dance self-efficacy, while vicarious experience has a negative impact. Augmented feedback also affects dance self-efficacy, though to a lesser extent compared to the former two factors. In contrast, physiological and affective states differ from those in other disciplines as common sources for evaluating dance self-efficacy. Moreover, environmental factors influence dance self-efficacy in the aftermath of a crisis or external stimulus.

Discussion: This study extends the stimulus-organism-response framework and social cognitive theory to the context of physical education. It aims to reveal the antecedents of dance self-efficacy behavior in physical education activities and explore whether persistent dance activities after a sudden crisis have a soothing effect on emotions. The research results enrich the relevant literature on dance education and provide theoretical support and management inspiration for those engaged in physical education activities.

Keywords: Stimulus–organism–response framework; Social cognitive theory; Structural equation modeling; Mood improvement ability; Dance self-efficacy

1. Introduction

In December 2022, the State Council of China issued the “New Ten Articles” for the new crown epidemic. The regulations further relaxed the epidemic control policy, indicating that the era of national isolation has officially come to an end. However, the COVID-19 outbreak since 2019 has not only affected people’s physical health. Previous studies have shown that with the spread of the epidemic, the number of mental health obstacles has significantly increased (Brooks et al., 2020; Holmes et al., 2020). Additionally, many studies have demonstrated that when people encounter sudden major crises, including previous outbreaks like the Middle East Respiratory Syndrome Coronavirus (MERS) and Severe Acute Respiratory Syndrome (SARS), or natural disasters such as earthquakes and hurricanes, symptoms of mental disorders have increased to varying degrees in the population (Batawi et al., 2019; Mak, Chu, Pan, Yiu, & Chan, 2009; Tracy, Norris, & Galea, 2011; Wang et al., 2015). This indicates a certain degree of connection between the outbreak of acute emergencies and mental disorders (Neria, Nandi, & Galea, 2008). In fact, during the multi-year health crisis caused by the epidemic, the number of people affected by emotional, behavioral, and mental diseases often surpasses the number of people affected by COVID-19 alone (Pedrosa et al., 2020). Approximately 53.8% of Chinese residents reported experiencing moderate or severe psychological impact from the COVID-19 epidemic, with 16.5% exhibiting symptoms of depression and 28.8% experiencing symptoms of anxiety (Cao et al., 2020). Moreover, the negative impact on emotions is evidently long-term, as reflected by increased suicide rates, depression, and loneliness among adolescents (Benke, Autenrieth, Asselmann, & Pané-Farré, 2023; Jones, Mallon, & Schnitzler, 2023). Therefore, finding ways to mitigate the long-term negative emotional responses to such ‘sudden crises’ has become an urgent need.

Although some experts have proposed possible measures to alleviate widespread negative emotions, such as increasing telephone psychiatric treatment (Cui, Wang, & Wang, 2020), these are not long-term plans that take into account the social burden and increased medical pressure. Indeed, many previous studies have found a correlation between mental health and factors such as physical activity, sleep quality, and overall quality of life in both clinical and non-clinical populations (Feng, Zhang, Du, Ye, & He, 2014). Certain home or indoor exercises, such as high-intensity interval training (HIIT) and relaxation training, have been shown to provide both physical and mental health benefits (Karlsen et al., 2017). It is widely recognized that exercise and physical activity have positive effects on mood regulation in most adults, as documented in numerous studies (Bernstein & McNally, 2017; World Health Organization, 2010). Additionally, research indicates that habitual aerobic activity and aerobic fitness contribute to mood regulation (Giles et al., 2017). Among the wide range of aerobic exercises available, dance is also an aerobic exercise that can effectively alleviate negative emotions. Previous research has indicated that Zumba can help improve symptoms of depression in women (Norouzi et al., 2020). A significant body of previous literature has demonstrated that dance activities have a positive impact on people’s health and well-being (Lovatt, 2018), particularly in the physical, social, and spiritual dimensions (Quiroga Murcia, Kreutz, Clift, & Bongard, 2010). However, few studies have investigated whether dance movement has the potential to improve mood or alleviate negative emotions following a sudden crisis, such as the COVID-19 pandemic. Additionally, it is insufficient to solely focus on mood improvement. Negative emotions often persist as an enduring emotional state. Therefore, we hypothesize that dance activities have the potential to effectively alleviate negative emotions caused by a crisis. To explore the antecedents of ongoing dance intention and achieve

sustainable improvement of negative emotions, it is crucial to identify the behaviors that practitioners should engage in to maintain motivation for continued dance activities. Hence, this study raises two core questions:

- Q₁. Examine whether engaging in continuous dance activities has the potential to improve individuals' emotional well-being when they encounter sudden crises, such as the COVID-19 pandemic.*
- Q₂. What are the antecedents of motivation to continue dancing activities, specifically Dance Self-Efficacy (DSE)?*

The remainder of this research is organized as follows: Section 2 introduces the literature research, model background, and hypotheses of the study. Section 3 explains the research methods. Section 4 analyzes the findings of the analysis. Finally, Section 5 provides conclusions and recommendations.

2.Literature

2.1. Dance Self-Efficacy (DSE)

Self-efficacy is a measure of an individual's confidence in their ability to control and handle themselves and their environment. High self-efficacy increases the propensity to learn and achieve goals, and this construct has been widely applied across various fields (Bandura, Freeman, & Lightsey, 1999; Myyry et al., 2022). However, there have been only a few studies on self-efficacy specifically in the field of dance (Lin, Hsia, Sung, & Hwang, 2019; Prewitt, Charpentier, Brosky, & Urbscheit, 2017). Through literature review, we found that recent research on dance self-efficacy has primarily focused on its subsequent effects rather than its antecedents. For instance, studies have investigated whether dance self-efficacy can enhance the performance of dance students (L.-H. Hsia, Huang, & Hwang, 2016; L. H. Hsia & Hwang, 2020). Therefore, it is imperative to develop an effective model for examining dance self-efficacy.

2.2. Effects of Aerobic Exercise on Mood

Habitual aerobic activity and aerobic fitness have been associated with mood regulation and mood benefits (Giles et al., 2017; Lott & Jensen, 2017). While the effects of long-term aerobic exercise on mood regulation capacity have not been fully explored, evidence from randomized controlled trials suggests that individuals who engage in 30 minutes of jogging recover faster from induced negative emotions compared to those who do not exercise (Edwards, Rhodes, & Loprinzi, 2017). Another study demonstrated that acute aerobic exercise could attenuate emotional responses to negative emotional cues (Bernstein & McNally, 2017). This may be attributed to the fact that acute aerobic exercise has the potential to improve executive function (Gross, 2013). However, to date, limited attention has been given to the potential of aerobic exercise, such as dancing, for alleviating negative emotions.

2.3. Research Framework

According to social cognitive theory, perceived self-efficacy, defined as the belief in one's ability to successfully perform tasks, is a key factor in human agency. When individuals believe in their capability to achieve certain results, they are motivated to strive for those results. These beliefs influence individual choices, such as what to pursue, how long to persist in the face of difficulty,

how much effort to exert, the level of anxiety experienced, and the awareness of accomplishments (Bandura, 1986; Bandura et al., 1999). The stimulus-organ-response (SOR) framework focuses on how stimulus cues, such as the occurrence of COVID-19, impact an organism's emotional thoughts and cognition, thus eliciting emotional responses in individuals, including their emotion regulation ability (Mehrabian & Russell, 1974). In this research, we applied a theoretical framework that integrates concepts from social cognitive theory, specifically self-efficacy (SE), and the stimulus-organ-response (SOR) framework. It is important to note that within the stimulus framework, all our variables are considered in the context of COVID-19. This is indeed the reality that has occurred in China and worldwide. We aimed to assess whether dance activities can alleviate the negative emotions triggered by sudden crises and explore the applicability of DSE in the field of dance. The framework is illustrated in Figure 1.

<<< Insert Figure 1 here >>>

2.4. Research hypothesis

Social cognitive theory recognizes perceived self-efficacy as a crucial factor in human subjective agency, which implies that exercise self-efficacy (SE) plays a vital role in adopting and maintaining a regular exercise routine (McAuley & Blissmer, 2000). While there is limited research specifically investigating the antecedents of self-efficacy in dance activities, Bandura identified four factors that influence self-efficacy as early as 1997: mastery experience, vicarious experience, augmented feedback (social persuasion), and physiological and affective states (Bandura et al., 1999).

Mastery experience refers to the personal efficacy information derived from past experiences of success and failure. It is typically the most influential performance-related information (Arslan, 2013). Success can instill a positive belief in personal efficacy, while failure (especially when experienced before a strong sense of efficacy is established) can undermine this positive belief (Dörnyei, 2001). Several studies have highlighted the significance of mastery experience, particularly in domains like mathematics or music, for self-efficacy (Hendricks, 2016; Joët, Usher, & Bressoux, 2011). Chase (1998) explored the sources of self-efficacy in physical education and sport, revealing that mastery experience was the most frequently reported source. Based on these findings, we propose the following hypothesis:

H1: Mastery experience has a positive effect on the dance exercise self-efficacy.

Vicarious experience refers to the effectiveness gained through comparing oneself with others who are similar or through observing the examples of comparable individuals. The success of others conveys positive efficacy information, while the failure of others conveys negative efficacy information. A study in the field of education in 2016 found that vicarious experience had a stronger impact on self-efficacy compared to other situations (Hendricks, 2016). Another study found that vicarious experiences appeared to have the only direct effect on self-efficacy (Capa-Aydin, Uzuntiryaki-Kondakci, & Ceylandag, 2018). Additionally, activities involving peer modeling and peer observation provide learners with the opportunity to enhance their own self-efficacy by observing others successfully perform tasks (Waddington, 2019). Based on these findings, we propose the following hypothesis in the context of dance:

H2: Vicarious experience has a positive effect on the dance exercise self-efficacy.

Social persuasion, often referred to as augmented feedback in the literature, is a broad term encompassing external feedback, such as recognition or encouragement from a dance teacher (Chiviacowsky & Wulf, 2007). This feedback can be provided during or after a dance performance. Augmented feedback has been shown to facilitate the acquisition and improvement of motor skills (Kluger & DeNisi, 1996). Instructional interventions aimed at developing self-efficacy, such as verbally encouraging students to set their own goals and monitor their progress, can enhance performance, motivation, and self-efficacy beliefs for future events (Zimmerman, 2000). Based on these findings, we propose the following hypotheses in the field of dance:

H3: Augmented feedback has a positive effect on the dance exercise self-efficacy.

Lastly, physiological and affective states refer to information derived from emotional or physiological conditions, such as tension and anxiety, which tend to influence people's perception of self-efficacy. Bandura suggests that anxiety can lead to a decrease in self-efficacy (Bandura, 1986). Although a study examining self-efficacy among university teachers from different departments found that physiological and affective states may not be common sources for evaluating self-efficacy, generally, individuals feel comfortable and confident in a positive emotional state, while feeling incompetent or insecure in a negative state (Myry et al., 2022). Additionally, in a study exploring music activity self-efficacy perception among non-music major college students, physiological and affective states were found to be the second most influential factor after mastery experience, highlighting their significance in shaping self-efficacy beliefs (Karki, 2023). Based on the above discussion, we propose the following hypothesis:

H4: Physiological and affective states has a positive effect on the dance exercise self-efficacy.

The exercise environment can influence exercise self-efficacy (Bodin & Hartig, 2003; Katula, 2000). A social (group) environment has been shown to result in a statistically significant improvement in sensory state responses compared to exercising alone (McAuley, Blissmer, Katula, & Duncan, 2000). In this study, environmental factors are defined at two main levels. The first level refers to the physical collective environment, where dance classes provide a distinct group environment for exercise. Additionally, after the outbreak of the epidemic, the mental environment surrounding students' exercise has also undergone changes. For example, a sudden crisis may shift individuals from a mental environment where exercise is not a priority to one where they recognize the need to exercise for improving their physical fitness, among other reasons. Furthermore, Smith et al. suggested that environmental changes do influence people's choices in physical activity, including the type of exercise they choose and their adherence to it (Bassett, Pucher, Buehler, Thompson, & Crouter, 2008; Smith, Broom, Murphy, & Biddle, 2022). Based on the above discussion, we propose the following hypothesis:

H5: Environmental factor has a positive effect on the dance exercise self-efficacy.

A high level of self-efficacy is essential for achieving intended effects (Bandura et al., 1999). It is evident that self-efficacy (SE) plays a vital role in maintaining regular exercise habits (McAuley & Blissmer, 2000). Self-efficacy is typically associated with individuals sustaining a high level of commitment to sports or engaging in regular physical activity (McAuley, Jerome, Elavsky, Marquez, & Ramsey, 2003; McAuley et al., 2007). Another study highlighted the significance of self-efficacy in promoting the execution of intentions when individuals face tasks that require continuous effort or the use of specific strategies (Wieber, Odenthal, & Gollwitzer, 2010). Given

that dance is an activity that demands sustained effort, these findings hold true in the domain of dance as well. Based on the above discussion, we propose the following hypothesis:

H6: Dance exercise self-efficacy has a positive effect on the ongoing dance intention.

Continuous exercise has been found to enhance individuals' ability to regulate implicit emotions (Zhang, Fu, Sun, Gong, & Tang, 2019). Dance activities have shown significant effectiveness in treating emotional disorders such as PTSD (Dieterich-Hartwell, 2017). Dance behavior can impact the autonomic nervous system, which plays a role in regulating emotions. Studies have demonstrated differences in pulse rate, skin response, and blood pressure when individuals synchronize their movements with the rhythm (Beausoleil & LeBaron, 2013). Additionally, other research has indicated that dancing can positively affect mood (Homann, 2010). Based on these findings, we posit that continuous dance activities are likely to have a similar effect in improving negative emotions stemming from emergencies such as epidemics. Thus, from the above discussion, we propose the following hypothesis:

H7: Ongoing dance intention has a positive effect on the mood improvement ability.

3. Methodology

3.1. Survey design

The questionnaire is designed into three parts. In the first part, we introduced the purpose and scope of the survey (for example, ask the student if they have had any recent dance studies or classes) and asked participants to clarify the background of the questionnaire. In the second part, we list all the questionnaire questions, as shown in Table 1. A seven-point Likert scale was used. Participants were asked to rate from "1 = strongly disagree" to "7 = strongly agree". Attention checkers are also mixed in this section. The attention checker asks respondents to choose a defined answer (i.e., please choose the fifth answer for this question). In the third section, we asked participants to submit their demographic information.

The questionnaire items were adapted from previous research. Three items of mastery experience are sourced from Capa-Aydin et al., (2018) and Yeh et al., (2019); three items of vicarious experience are sourced from Capa-Aydin et al., (2018) and Lee & Lee (2022); three items of augmented feedback are sourced from Capa-Aydin et al., (2018), Usher & Pajares (2008) and Nob (2021); three items of physiological and affective states are sourced from Capa-Aydin et al., (2018) and Roth & Solomon (2002); three items of environmental factor are sourced from McAuley et al., (2003) and McAuley & Blissmer (2000); three items of dance self-efficacy are sourced from McAuley & Duncan (1993) and Resnick & Jenkins (2000); three items of ongoing dance intention are sourced from De Bruijn & Rhodes (2011) and De Bruijn & Van den Putte (2012); Among these factors, the ability to improve mood is noteworthy. In 1998, Huelsman & Munz introduced a four-dimensional scale for measuring personality and emotions, which includes Positive Energy, Tiredness, Negative Activation, and Relaxation. Research indicates that this scale demonstrates good internal consistency, as well as concurrent and discriminant validity (Huelsman, Furr, & Nemanick Jr, 2003). With the assistance of this scale, we developed four items to assess the ability to improve mood.

Prior to conducting this investigation, approval from the Moral Ethics Review Board was formally obtained from Xinyang Normal University, approval number: XFEC-2023-021. Over the course of one month, from March to April, we distributed a total of 500 questionnaires to students from Xinyang Normal University in China and the Dance Academy of Hanyang University in South Korea. The questionnaire was conducted digitally, with a link provided on the internet. Respondents were required to click on the link or scan the QR code to access and complete the questionnaire. As an incentive, participants who completed the questionnaire were offered a complimentary ballpoint pen. Finally, we collected 370 complete questionnaires. We deleted the invalid questionnaires. The invalid questionnaires are those that failed to answer attention checker questions. Failing to answer the question indicates that the respondents didn't read instructions carefully and their responses cannot be trusted. Finally, we obtained 304 valid responses.

After collecting the data, the data were analyzed following a two-step process (Li, Lai, Yang, & Yuen, 2021). First, we did confirmatory factor analysis to test the reliability of the measurement model. Next, we did structural equation modeling to test the hypotheses.

3.3. *Non-response bias and common method bias*

Non-response can be a trouble for self-administrated surveys. We used t-test to examine non-response bias. The data are split into two parts based on the completion time and the result shows no significant difference between the two groups (Armstrong & Overton, 1977). Hence, we conclude that non-response bias is not a problem in our research.

Harman's single factor is used to examine common method bias. The total variance of the single-factor model is 39.7% and the value is smaller than the cut-off value of 50% (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Hence, we conclude common method bias is not a concern.

4. Results

The collected data were analyzed using structural equation modeling. The analysis process can be divided into two steps. First, a confirmatory factor analysis (CFA) was conducted to evaluate the measurement model's validity and reliability. Then, the hypotheses proposed in this study were tested using structural model analysis. The analysis process was conducted on RStudio version 4.2.2.

4.1. *Demographic analysis results*

The demographic information is displayed in Table 2. As shown in Table 2, 74.34% of the respondents are female and 25.66% are male. This aligns with the current situation of students in the two university, where the gender ratio is approximately 7:3, with a higher proportion of women compared to men. Our survey respondents are in line with the objective facts. From the age distribution, we know the majority of respondents are below 26 years old. Only 0.66% of the respondents are more than 26 years old. Hence, the respondents are relatively young. Furthermore, the majority of students fall within the age group of 18-22, which coincides with the period when dance practice courses are most commonly undertaken by students in dance colleges after entering university.

<<<Insert Table 2 here>>>

4.2. Confirmatory factor analysis results

Before doing structural equation modeling, we did confirmatory factor analysis to examine the structural reliability and validity of the proposed model. As shown in Table 3, the model fits are satisfactory: the comparative fit index (CFI=0.943) and Tucker-Lewis fit index (TLI = 0.933) are above 0.90; the root mean square error of approximate 0.072 which is less than 0.08; the standardized root mean square residual (SRMR= 0.0243) is less than 0.10(Hu & Bentler, 1999). Composite reliability (CR) and average variance extracted (AVE) values are symbols of model reliability. As shown in table 3, the AVE values are higher than 0.5 and CR values are higher than 0.70 (Hair, Black, Babin, Anderson, & Tatham, 2009). Hence, the structural reliability is conformed.

Moreover, the AVE values are higher than the squared correlations between constructions. Hence, the structure's discriminant validity is confirmed. We can proceed to do structural equation modeling to test hypotheses.

<<<Insert Table 3 here>>>

4.3. Structural equation modelling results

The model fits of structural equation modeling are displayed in figure 2 and table 4. The research model has good model fits ($\chi^2/df = (518/246) = 2.10$; CFI=0.943; TLI = 0.9337; RMSEA = 0.072; SRMR = 0.0243). The R square of ongoing dance intention is 0.623 and that of mood improvement ability is 0.724.

<<<Insert figure 2 and table 4 here>>>

4.3.1. Mastery experience has a positive effect on the dance exercise self-efficacy.

The most reliable source of efficacy information is often derived from our own accomplished achievements, providing tangible evidence of success (Schunk & Usher, 2012). Other studies have found that students with superior skill mastery tend to experience more flow than those with average skill mastery. (Csikszentmihalyi, Rathunde, & Whalen, 1997). Our research also yielded similar results. It is evident that mastery experience has the greatest impact on DSE, highlighting the commonality shared by most disciplines, where mastery in dance significantly influences dancers' self-efficacy.

4.3.2. Vicarious experience has a negative effect on the dance exercise self-efficacy.

Interestingly, we discovered that vicarious experience has a negative impact on DSE, which contradicts several previous studies (Hendricks, 2016; Waddington, 2019). Upon revisiting the literature, we found that while many students thrive in competitive environments, it is equally argued that not all students are well-suited to a learning environment where they are constantly compared to others (Webster, 2002). The learning environment that involves ranking individuals against each other can contribute to vicarious experiences having a negative effect on self-efficacy, particularly among women (Hendricks, 2014). Dance activities, in particular, are predominantly pursued by women. Taking our findings into consideration, it is essential for practitioners to

exercise caution when engaging in comparisons with others (or role models) in order to avoid instilling resentment among dancers and diminishing their self-efficacy.

4.3.3. Augmented feedback has a positive effect on the dance exercise self-efficacy.

The impact of augmented feedback on DSE is not as pronounced as the previous two factors, but it still yields significant results, demonstrating that appropriate Augmented feedback contributes to the enhancement and refinement of motor behavior (Kluger & DeNisi, 1996). This finding diverges from previous research that has shown consistent results (Zimmerman, 2000). Therefore, professionals in the field of dance may want to consider offering appropriate encouragement and recognition during or after dance activities, whether through verbal or tangible means, to stimulate stronger DSE in dancers.

4.3.4. Physiological and affective states do not play a significant role in the dance exercise self-efficacy.

Physiological and affective states do not play a significant role in DSE, which contradicts some previous studies. For instance, researcher Karki found that physiological and affective states ranked second in their impact on self-efficacy (Karki, 2023). However, another study conducted by scholar Myyry et al., on self-efficacy among university teachers from different departments found that physiological and affective states did not appear to be common sources for evaluating self-efficacy (Myyry et al., 2022). Consistent with Myyry et al., our findings indicated that physiological and affective states had no significant effects on DSE. Thus, physiological and affective states do not seem to be a prevalent factor in assessing DSE.

4.3.5. Environmental factor has a positive effect on the dance exercise self-efficacy.

It may seem like a well-established topic that the exercise environment influences exercise self-efficacy (Bodin & Hartig, 2003; Katula, 2000; McAuley et al., 2000). What is intriguing in our study is that this environment encompasses not only the physical collective setting but also the psychological environment that has changed due to a sudden external stimulus (such as COVID-19). The results confirm the validity of our hypothesis, indicating that the change in the environment after a sudden crisis can indeed enhance students' perception of DSE to some extent. However, the magnitude of this effect is considerably lower compared to the impact of mastery experience and vicarious experience.

4.3.6. Dance exercise self-efficacy has a positive effect on the ongoing dance intention.

A high level of self-efficacy is a prerequisite for achieving intended effects (Bandura et al., 1999). It is widely recognized that self-efficacy is a crucial factor in determining regular exercise participation (McAuley & Blissmer, 2000). Similarly, in the field of dance, individuals with higher DSE are more likely to sustain their investment in dance activities (McAuley et al., 2003). Dance, being an activity that requires continuous effort, highlights the importance of enhancing dancers' DSE. Therefore, practitioners should actively seek ways to improve dancers' self-efficacy.

4.3.7. Ongoing dance intention has a positive effect on the mood improvement ability.

Continuous exercise has been shown to enhance individuals' ability to regulate emotions (Zhang et al., 2019), and dance activities have demonstrated significant effectiveness in treating emotional disorders such as PTSD (Dieterich-Hartwell, 2017). Additionally, dance activities have been found to improve mood (Homann, 2010). Our research findings align with previous literature, supporting the notion that maintaining a consistent dance practice during a sudden crisis, such as an epidemic, can contribute to alleviating negative emotions associated with such emergencies. Therefore, we encourage and recommend more people to engage in or initiate aerobic activities like dancing, as they can assist in the subtle regulation of the autonomic nervous system and emotions (Beausoleil & LeBaron, 2013).

5. Conclusion

5.1. Summary of results

The post-pandemic era has presented us with numerous pressing issues to address, and mental health problems are among the crucial ones that cannot be overlooked. In many instances, when people face sudden crises like epidemics, such as the previous Middle East Respiratory Syndrome Coronavirus (MERS) and Severe Acute Respiratory Syndrome (SARS), or natural disasters like earthquakes and hurricanes, the prevalence of mental health symptoms tends to increase to varying extents. These negative emotions may persist to some degree even after the crisis subsides, albeit in an 'invisible' manner. Consequently, it remains imperative to urgently seek ways to ameliorate 'sudden crisis mood disorders'.

This study integrates the Stimulus-Organism-Response framework and Social Cognitive Theory to achieve two main objectives: First, to explore the applicability of self-efficacy in the field of dance using Social Cognitive Theory. Second, to examine whether continuous dance activities have the potential to improve individuals' emotional well-being when confronted with sudden crises such as epidemics. The findings reveal that both Mastery experience and Vicarious experience have significant impacts on DSE, albeit with different valences. mastery experience positively influences DSE, whereas vicarious experience has a negative effect. Augmented feedback also influences DSE, although to a lesser extent compared to the former two factors. In contrast, physiological and affective states differ from other disciplines, as they do not appear to be common sources for evaluating DSE. Moreover, environmental factors demonstrate a certain degree of influence on DSE in the aftermath of a crisis or external stimulus. These factors can induce changes in individuals' perception of DSE to some extent, but their impact is not as strong as that of mastery experience and vicarious experience. DSE emerges as a crucial factor in sustaining individuals' ongoing dance intentions. To maintain a high level of engagement in dance activities, individuals are encouraged to actively enhance their DSE. Additionally, dance activities have a positive impact on mood improvement, suggesting that maintaining a continuous dance intention or engaging in dance behaviors can alleviate negative emotions associated with emergencies like epidemics. Given these findings, we wholeheartedly encourage and recommend more people to participate in or initiate aerobic activities such as dance. Such activities can contribute to the subtle regulation of the autonomic nervous system, positively influencing emotional well-being.

5.2. Theoretical and practical implications

Our research makes significant contributions in several key areas. Firstly, we propose a novel model that integrates the Stimulus-Organism-Response framework and Social Cognitive Theory. This model holds importance for future studies investigating the development of dance efficacy and the role of dance activities in mitigating emergent crisis emotions. The results of our study have the potential to enhance the existing body of research on dance behavior and sports psychology by offering a more advanced perspective. Secondly, our findings have practical implications for relevant practitioners. Firstly, dance practitioners aiming to enhance DSE must prioritize the two major factors of Mastery experience and Vicarious experience. The former has a significant positive impact, while the latter has a negative influence. Secondly, recognizing the pivotal role of DSE in motivating dancers to sustain their dance intentions, practitioners should exert every effort to foster and improve dancers' DSE. Lastly, our research provides a promising avenue for alleviating the long-term negative emotions associated with crises. The results demonstrate that aerobic exercises such as dance can effectively aid individuals in coping with crisis-induced negative emotions. Therefore, we strongly encourage individuals grappling with negative emotions during crises to engage in aerobic activities like dancing. In summary, our research contributes by presenting a comprehensive model, offering practical guidance to practitioners, and highlighting the potential of aerobic exercises, such as dance, in ameliorating crisis-related negative emotions. We encourage more people who experience emotional distress after a crisis to embrace aerobic exercise and discover the benefits it can bring.

5.3. Limitation and recommendations

Our research is subject to certain limitations that should be acknowledged. Firstly, due to time and resource constraints, our study focused primarily on students from dance colleges in two countries. However, the generalizability of our findings to non-dance majors or individuals with a casual interest in dancing remains to be investigated. Therefore, we recommend that future researchers extend their investigations to non-dance professionals who have an interest in dance but are not pursuing it professionally. Secondly, our study adopted factors from the Stimulus-Organism-Response framework and Social Cognitive Theory. While our results demonstrate the model's explanatory power, we acknowledge that there are other physical and cognitive factors that have yet to be explored. We encourage future research to incorporate additional factors and theories that can provide a more comprehensive understanding of dance efficacy and the role of dance activities in alleviating emotions. A third limitation is that we did not extensively explore result heterogeneity. Therefore, we suggest that researchers employ methods such as ANOVA or variable control techniques to gain a deeper understanding of potential variations in the results. Lastly, due to the limitations of our statistical methods, our data was derived from a single-time sample. We recommend that future researchers consider incorporating longitudinal or time-based approaches to further explore the topic. By acknowledging these limitations, we hope to encourage and guide future research in addressing these gaps and advancing our understanding of dance efficacy and its benefits for emotional well-being.

Competing interests

The author declares no competing interests.

Ethical approval

An official exemption has been obtained from the Institutional Review Board of Xinyang Normal University. The approval code is XFEC-2023-021. The study is exempted from the ethical review due to the satisfaction of specific requirements, which include the anonymity of data; the exclusion of invasive questions; the exclusion of environmental manipulation.

Informed consent

Written informed consent to participate in this study was provided prior to commencing the questionnaire survey.

Availability of data/materials

The data used in this study is confidential.

Table 1 Questionnaire questions

Construct	Items	Source
Mastery experience	I consider my dancing ability to be excellent	Capa-Aydin et al., (2018) and Parncutt & McPherson (2002)
	I feel highly confident in my dancing skills."	
	From any perspective, I believe my dancing is very good.	
Vicarious experience	By observing the dances of others, particularly those who are skilled dancers, I can enhance my own dancing ability	Capa-Aydin et al., (2018) and Lee & Lee (2022)
	By observing the dances of others, especially those who excel in dancing, I can boost my confidence in my own dancing skills.	
	By comparing my dancing with that of others, particularly my classmates who are proficient dancers, it motivates me to improve my own dancing."	
Augmented feedback	My dance teacher has told me that I am a skilled dancer.	Capa-Aydin et al., (2018), Usher & Pajares (2008) and Nob (2021)
	My dance classmates have told me that I dance very well.	
	My parents have told me that I am a talented dancer."	

Physiological and affective states	Dancing consumes all of my energy.	Capa-Aydin et al., (2018) and Roth & Solmon (2002)
	Dancing makes me feel physically exhausted like never before.	
	Dancing makes me feel extremely tired like never before."	
Environmental factor	After the COVID-19 pandemic, in terms of physical environmental requirements (such as infrastructure and facilities), the dancing environment is very good	McAuley et al., (2003) and McAuley & Blissmer (2000)
	After the COVID-19 pandemic, in terms of psychological environmental needs (for example, my personal motivation to go dancing), the dancing environment is very good.	
	After the COVID-19 pandemic, overall, the dancing environment is very good."	
Dance self-efficacy	I feel happy when I dance.	McAuley & Duncan (1993) and Resnick & Jenkins (2000)
	I never experience pain when I dance.	
	I really enjoy dancing.	
Ongoing dance intention	The probability that I would continue dancing within the next 6 months is high.	De Bruijn & Rhodes (2011) and De Bruijn & Van den Putte (2012)
	My willingness to continue dancing within the next 6 months is high.	

	The likelihood of me continuing to dance within the next 6 months is high.	
Mood improvement ability	Through dance activities, I feel an increase in my positive energy.	Huelsman & Munz (1998) and Huelsman & Nemanick (2003)
	Through dance activities, I feel a reduction in my tiredness.	
	Through dance activities, I feel a decrease in my negative arousal.	
	Through dance activities, I feel a greater sense of relaxation.	

Figure 1. Research framework

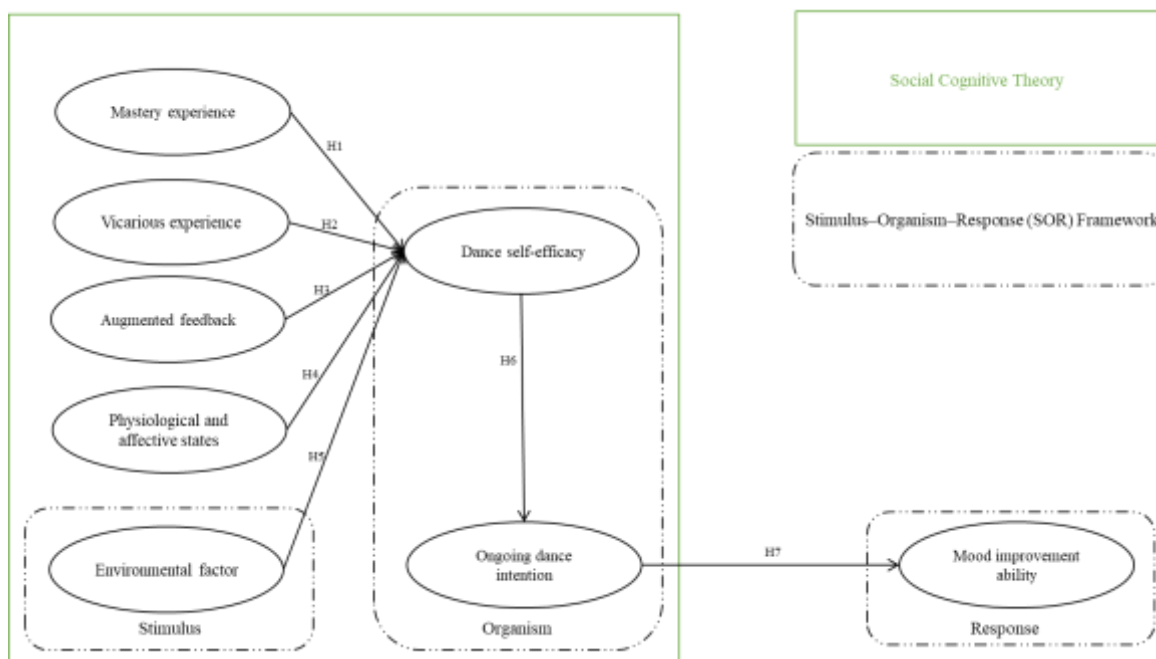


Table 2. Demographic information

Demographic information	Frequency	Percentage
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Gender	Male	78	25.66%
	Female	226	74.34%
Age	18-20	78	25.66%
	20-22	184	60.53%
	22-24	32	10.53%
	24-26	8	2.63%
	>26	2	0.66%

Table 3. CFA Result

Construct	Indicator	λ	AVE	CR
Mastery experience	ME1	0.762	0.551	0.786
	ME2	0.775		
	ME3	0.687		
Vicarious experience	VE1	0.794	0.678	0.863
	VE2	0.830		
	VE3	0.845		
Augmented feedback	AF1	0.745	0.586	0.800
	AF2	0.737		
	AF3	0.784		
Physiological and affective states	PAS1	0.707	0.589	0.810
	PAS2	0.736		
	PAS3	0.852		
Environmental factor	EF1	0.728	0.527	0.852
	EF2	0.778		
	EF3	0.696		
	DSE1	0.794	0.642	0.843

Dance self-efficacy	DSE2	0.826		
	DSE3	0.783		
Ongoing dance intention	ODI1	0.833	0.663	0.745
	ODI2	0.780		
	ODI3	0.829		
Mood improvement ability	MIA1	0.867	0.715	0.855
	MIA2	0.845		
	MIA3	0.825		

Figure 2. Structural modelling result

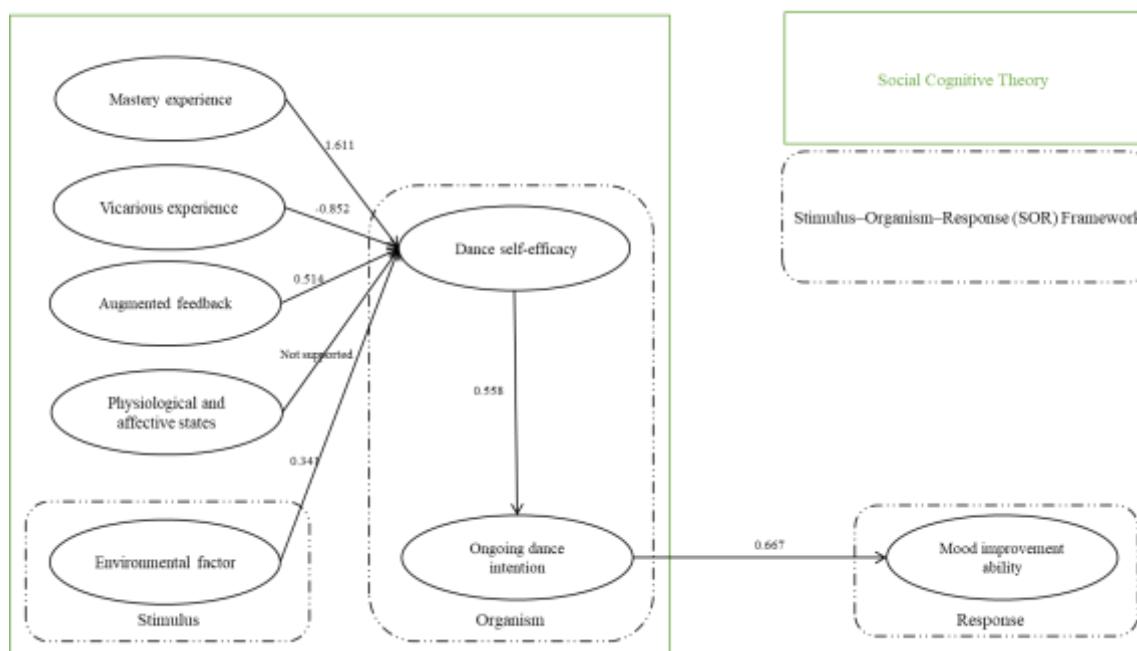


Table 4. Structural equation modelling results

Hypotheses	Estimate	P	Conclusion
Mastery experience → Dance self-efficacy [H1]	1.611	0.000** *	Supported

Vicarious experience→ Dance self-efficacy [H2]	-0.852	0.05*	Supported
Augmented feedback→ Dance self-efficacy [H3]	0.514	0.05*	Supported
Physiological and affective states→ Dance self-efficacy [H4]	0.524	0.269	Not supported
Environmental factor → Dance self-efficacy [H5]	0.341	0.05*	Supported
Dance self-efficacy→ Ongoing dance intention [H6]	0.558	0.000** *	Supported
Ongoing dance intention→ Mood improvement ability [H7]	0.667	0.000** *	Supported

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