

RESEARCH ARTICLE

Effects of college students' perceptions of Orff Schulwerk on their music learning performances: The mediating effect of music learning interest

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ABSTRACT

Many scholars have focused on the advantages and characteristics of Orff Schulwerk in improving students' music learning performance; however, the effects of students' perceptions of Orff Schulwerk on their learning performance remain unexplored. Based on the technology acceptance model (TAM), this study explored the differences among college students of different grades in terms of Orff Schulwerk perception, music learning interests, and learning performance; the effects of students' perceptions of Orff Schulwerk on their music learning performances and the mediating effect of music learning interest, with 433 Chinese college students majoring in preschool education as the samples. The results showed that college students of different grades show no significant differences in Orff Schulwerk perception, music learning interests, and learning performance; college students' perceptions of Orff Schulwerk had a significant positive effect on their music learning performances, and their music learning interest had a partial mediating effect. Supplementing the theoretical literature on Orff Schulwerk, this study fills the gap in literature, extends the application of the TAM to the field of education, and provides a practical reference for colleges and universities to use Orff Schulwerk for provoking college students' learning interest and improving their performances.

Keywords: technology acceptance model; college students; Orff Schulwerk; music learning interest; music learning performance

1. Introduction

Music is crucial to a person's sentiments, morality, attainments, concepts, thinking, and spirit, and music education plays a pivotal role in facilitating the overall development of college students and enhancing their music level and learning performance^[1,2]. More importantly, the music accomplishment and music learning performance of college students majoring in preschool education may have a direct effect on preschoolers' perception of music and intellectual development^[3]. However, in Chinese colleges and universities, the traditional spoon-fed teaching method is commonly used by teachers for teaching music to students majoring in preschool education. This method involves mechanical teaching in which students fail to perceive and experience the charm of music^[4]. Under such circumstances, students' learning is passive, and their musical potential is not fully unleashed; thus, they lose interest in learning music, which ultimately affects their music learning performances^[5,6]. Therefore, a key concern for educators in Chinese universities is to reform and

ARTICLE INFO

Received: 25 October 2023 | Accepted: 22 November 2023 | Available online: 28 December 2023

CITATION

Mu R, Liu D. Effects of college students' perceptions of Orff Schulwerk on their music learning performances: The mediating effect of music learning interest. *Environment and Social Psychology* 2024; 9(3): 2204. doi: 10.54517/esp.v9i3.2204

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innovate the music teaching methods in a manner that can provoke preschool education majors' music learning interest and improve their learning performances.

Orff Schulwerk is becoming increasingly popular among educators for its lively and varied teaching forms^[7,8]. Focusing on the characteristics of students' physical and mental development and the laws of music education, Orff Schulwerk allows students to dip in music teaching easily, naturally, and actively as well as experience the charm of music, thereby inviting their learning interest, enhancing their accomplishment, and helping them achieve harmonious physical and mental development^[9]. Based on a review of literature, Costanza and Russell^[10] concluded that Orff Schulwerk focuses on students' major role and teachers' guidance, which can develop students' interest in learning music. Experimental studies have also shown that the Orff approach uses language, movement, percussion, and other elements to help students concentrate and heighten their sense of rhythm, thus awakening their interest in music learning and improving their learning performance^[11]. However, college students' perceptual abilities of the classroom and teaching environment are closely related to their grade and age^[12,13]. Therefore, there might be grade and age differences in college students' perception of Orff Schulwerk, music learning interests, and learning performance. In addition, some studies have shown that college students' interest in learning music can significantly affect their academic performances^[14-16].

Although the Orff method can spark students' interest in learning music and improve their performances, we found that in the same Orff Schulwerk environment, discrepancies exist between students' interest and their performances^[17]. We speculate that the reason for these discrepancies may be related to the differences in students' perceptions of Orff Schulwerk. This speculation is based on the technology acceptance model (TAM) according to which an individual's perception of a new technology can influence how it works^[18]. However, scholars have explored the effects of Orff Schulwerk on students' music learning interest and performance based on the advantages and characteristics of Orff Schulwerk^[19-21]; however, they did not consider the effects of students' perceptions of the method. In addition, scholars have studied Orff Schulwerk based on literature review and experiments, and they have seldom conducted empirical research to validate their conclusions. Therefore, determining the effect of students' perceptions of Orff Schulwerk on their music learning interest and performances through empirical research is necessary.

In the present study, we selected Chinese college students majoring in preschool education as the samples. Based on the TAM, we explored the differences among college students of different grades in terms of Orff Schulwerk perception, music learning interests, and learning performance; the effects of their perceptions of Orff Schulwerk on their music learning performances, and the mediating effect of their music learning interest.

The study serves as a useful supplement to the theoretical literature on Orff Schulwerk, filling the gap in existing literature, extending the application of the TAM to the field of education, and providing a practical reference for colleges and universities to use Orff Schulwerk for provoking college students' learning interest and improving their performances.

2. Literature review

2.1. Differences in variables among college students of different grades

The study indicates that the age of adolescents can influence their perceptual abilities, and these perceptual abilities, in turn, can impact their academic performance and learning performance^[22]. Additionally, students of different grades and ages exhibit variations in their perception of the classroom and teaching environment^[12,13]. In this study, Orff Schulwerk is considered as a teaching environment, and the varying duration of exposure to Orff Schulwerk among students of different grades may result in different perceptions

of Orff Schulwerk. This, in turn, could influence their music learning interests and learning performance.

Therefore, this study proposes the hypothesis H1: There are differences among college students of different grades in terms of Orff Schulwerk perception, music learning interests, and learning performance.

2.2. Effects of students' perceptions of Orff Schulwerk on music learning performance

Orff Schulwerk was created by Carl Orff, an outstanding German musician, and it is one of the three most well-known and widely influenced music education systems in the world^[9,23]. The most outstanding contribution of Orff Schulwerk is that it has broken the barriers of traditional teaching concepts, believing that music education should resort to sensibility and return to humanism, thus encouraging students to realize the charm of music when learning music and enhancing their interest in music^[24,25]. Scholars have explored the impact of Orff Schulwerk on students' music learning performances based on the positives and characteristics of this teaching method. For example, Liu^[26] believes that Orff Schulwerk encourages students to directly experience music through movements, rhythms, recitations, dances, playing, or improvisation, helping them unleash their potential when listening to and experiencing music, and deliver better performances. Tabuena^[9] highlighted one of the advantages of Orff Schulwerk that it allows students to use their initiative, and provokes their enthusiasm for learning, enlivens classes, enables them to learn in a pleasant manner, improves their power to concentrate and memorize music, and ultimately improves their music learning performances. However, some studies have pointed out limitations of the Orff Schulwerk approach. Taylor suggests that Orff Schulwerk places higher demands on students' musical foundation, making rhythmic participation in ensemble playing challenging for students with weaker musical backgrounds^[27]. These students may face difficulties in maintaining rhythm due to various factors, impacting the precision of ensemble playing, and potentially adversely affecting music learning interests and performance. Additionally, Orff Schulwerk emphasizes physical engagement and improvisation, which contradicts the more formal classroom atmosphere in China^[28].

Notably, some studies argue that an individual's ability to perceive new things (such as Orff Schulwerk) determines their acceptance of those things, which in turn affects their practical value^[29]. Relevant educational studies have shown that students' perception of a teaching method can affect their understanding of the key values of the method, thus affecting its effectiveness^[30]. Therefore, we speculate that when Orff Schulwerk is introduced to music teaching, students' perception of this method varies widely, which inevitably leads to differences in the degree of acceptance among them, thus affecting the effectiveness of Orff Schulwerk and ultimately affecting the students' music learning performances.

Therefore, we propose hypothesis H2: College students' perception of Orff Schulwerk has a significant and positive effect on their music learning performances.

2.3. The mediating effect of music learning interest

Learning interest is the foundation of acquiring knowledge and an internal force that ignites the desire to seek knowledge. It is a dynamic process, wherein people first find something "interesting" and then develop "interest" in it^[31,32]. Orff Schulwerk combines language and rhythm with music teaching, allowing students to feel the fun of learning music and develop an interest in learning it in the form of rhythms, recitation, music games, singing, dancing, painting, acting, or other forms^[33]. This view has been supported by many subsequent studies. Hao^[34] proposed that Orff Schulwerk can encourage students to participate actively, and experience and perceive music on their own. Because simple and interesting teaching can boost students' enthusiasm for participation and improve their memory of the acquired knowledge, it positively affects their interest in learning music. By conducting a questionnaire survey and interviews with primary school students in Indonesia, Saputra^[35] found that Orff Schulwerk can significantly enhance students' interest in music learning.

Studies investigating the effects of Orff Schulwerk on students’ music learning interest have focused only on the advantages and characteristics of the method, while ignoring students’ perceptions of the method. As mentioned earlier, based on a literature review, we speculated that students’ perceptions of Orff Schulwerk may influence their interest in learning music. In addition, many studies have found that students’ interest in learning music can improve their academic performances; for example, Ryan and Deci^[36] found that students who have greater learning interest tend to have stronger intrinsic motivation to learn, feel a greater desire to realize their value through learning, and deliver better academic performance. Yu et al.^[15] conducted empirical research in a sample of 96 college students and reported that learning interest has a significant and positive correlation with academic performance; another experimental study showed that students in the experimental group who used interest-actuating strategies delivered far better academic performance than those in the control group who did not use the strategies^[16].

Therefore, we propose hypothesis H3: College students’ interest in learning music has a partial mediating effect on their perception of Orff Schulwerk and their music learning performances.

2.4. Theory and research model

The TAM, pioneered by Davis^[18], was initially a theoretical model used to explain the problem of utilization of computer information systems or new technologies. The model has two determinants. The first is perceived usefulness, which reflects the degree to which an individual believes that using a system or new technology will improve their job performance. The second is perceived ease of use, which reflects the degree to which an individual perceives using a system or new technology easy^[37]. These two factors determine the acceptance or use of a system or new technology by an individual, thus affecting how the system or new technology works^[38]. In recent years, the TAM has been applied to different research fields such as educational technology and innovative teaching methods^[39,40]. In our study, Orff Schulwerk is considered a “system or new technology,” whereas music learning interest and performance are considered as the “effect.” Therefore, according to the two determinants of the TAM, namely “perceived usefulness” and “perceived ease of use,” students’ perceptions of the “usefulness” and “ease of use” of Orff Schulwerk may affect their music learning interest and performance. Furthermore, the foundational theory of the Technology Acceptance Model is the Theory of Rational Behavior, primarily employed to analyze how attitudes consciously influence individual behavior^[41]. In the context of this study, it is applied to examine how students’ attitudes (perception) toward Orff Schulwerk impact their behavior (music learning performance). Moreover, this theory has been previously applied to research on factors influencing learning performance^[42].

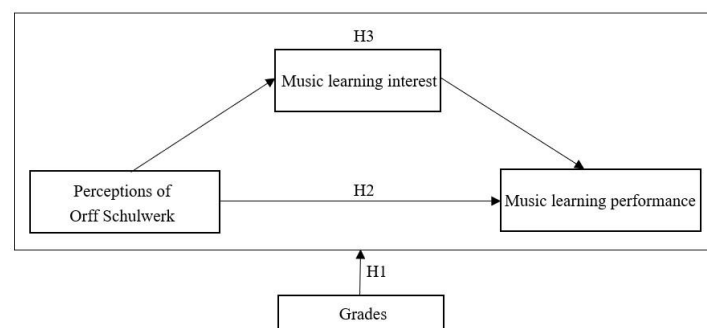


Figure 1. Hypothetical model.

In the present study, with Chinese college students majoring in preschool education as the samples, we used the TAM to explore the relationship between their perceptions of Orff Schulwerk and their music learning interest and performance. We hypothesized that students’ perceptions of Orff Schulwerk may affect their music

learning performances and that their music learning interest may have a mediating role in the effect of students' perceptions of Orff Schulwerk on their learning performances. The theoretical model proposed in this study is shown in **Figure 1**.

3. Method

3.1. Samples and procedure

Using convenience sampling, we selected 433 undergraduate students from Chinese universities as samples. Among them, 210 were male, and 223 were female. There were 162 freshmen (around 18 years old), 150 sophomores (around 19 years old), and 121 juniors (around 20 years old). Due to the absence of music courses in the fourth year, senior students were not included in this study. All selected participants had studied music courses in the environment of Orff Schulwerk from their freshman year to their junior year, contributing to the study's strong representativeness. We read out the informed consent form, informing them of the purpose of our study, the anonymity and confidentiality of the questionnaire, and that they could refuse or withdraw from our study at any time. The samples signed the informed consent form before filling the questionnaires on Questionnaire Star, an online survey website (www.wjx.cn), by scanning the QR code. A total of 553 questionnaires were returned. After weeding out the invalid questionnaires, we recovered 433 valid questionnaires, which accounted for 78.3% of the total. Among the 433 samples, 210 were male and 223 were female students.

3.2. Research instruments

3.2.1. The questionnaire on the perceptions of Orff Schulwerk

We used the questionnaire designed by Zhang^[43] to determine the students' perceptions of Orff Schulwerk. The questionnaire targets Chinese college students, has high reliability and validity, and is suitable for our study. The questionnaire consists of 17 items, such as "using Orff pedagogy helps create a positive and harmonious atmosphere in the classroom," and scoring is based on a Likert 5-point system. The scores from 1 to 5 represent "strongly disagree," "somewhat disagree," "not certain," "somewhat agree," and "strongly agree," respectively, with higher scores indicating higher levels of college students' perceptions of Orff Schulwerk.

3.2.2. The scale of music learning interest

We used the scale of learning interest developed by Xu^[44], which has high reliability and validity in measuring Chinese adolescents' learning interest. The original scale was modified to make it more suitable for music. The scale comprises five items, including "I enjoy studying very much." It is a 5-point Likert scale, with scores ranging from 1 to 5, where 1 indicates "strongly disagree," 2 indicates "somewhat disagree," 3 indicates "not sure," 4 indicates "somewhat agree," and 5 indicates "strongly agree"; the higher the scores, the deeper is the interest in learning.

3.2.3. The scale of music learning performance

We used the learning performance scale developed by Wang^[45], which targets Chinese college students and has high reliability and validity. The original scale was modified to make it more suitable for the subject of music. The scale consists of five items, such as "I can make better use of learning resources to achieve my learning goals." It is a 5-point Likert scale, with scores ranging from 1 to 5, where 1 represents "strongly disagree," 2 represents "somewhat disagree," 3 represents "not sure," 4 represents "somewhat agree," and 5 represents "strongly agree"; the higher the score, the better is the music learning performance.–

3.3. Statistical analysis

Data were analyzed using SPSS 21.0 and AMOS 25.0 software. First, we tested the reliability and validity

of the scales through reliability analysis and confirmatory factor analysis, respectively. Second, we conducted descriptive analysis and Pearson correlation analysis to analyze the samples' overall performance on each variable and the degree of correlation between the variables. Third, we tested the mediator model by using the SPSS PROCESS program to analyze the direct effect of college students' perception of Orff Schulwerk on their music learning performances as well as the mediating effect of their music learning interest. Finally, we tested the mediating effect of music learning interest by using the bias-corrected nonparametric percentile bootstrap method.

4. Results

4.1. Reliability and validity analysis

Before the formal survey, a preliminary test with 158 small samples was conducted to initially validate the reliability and validity of the scales. For methodological rigor, this study employed 433 formal samples to conduct reliability analysis and confirmatory factor analysis (CFA). The reliability analysis revealed that the Cronbach's α values for the Orff Pedagogy Perception Questionnaire, Music Learning Interest Scale, and Music Learning Performance Scale were 0.955, 0.923, and 0.910, respectively, all exceeding the standard of 0.700^[46], indicating good reliability of the scales. As shown in **Table 1**, the results of the CFA indicated that the fit indices for each scale met the standards proposed by Moss et al. and Malekpour et al.^[47,48]: $RMR < 0.08$, $GFI > 0.8$, $AGFI > 0.8$, $PNFI > 0.5$, $PGFI > 0.5$, $NFI > 0.8$, $IFI > 0.8$, $CFI > 0.8$, $SRMR < 0.08$, $RMSEA < 0.08$, suggesting that each scale has good structural validity.

Table 1. Confirmatory Factor Analysis (CFA).

Scales	<i>RMR</i> (< 0.08)	<i>GFI</i> (> 0.8)	<i>NFI</i> (> 0.8)	<i>CFI</i> (> 0.8)	<i>TLI</i> (> 0.8)
The questionnaire on the perceptions of Orff Schulwerk	0.072	0.860	0.862	0.870	0.849
The scale of music learning interest	0.012	0.992	0.994	0.997	0.995
The scale of music learning performance	0.053	0.875	0.911	0.913	0.827

4.2. Common method bias test

This study utilized convenience sampling for data collection, and the surveys on the perception of Orff Schulwerk, music learning interests, and music learning performance all relied on self-reports from the same students. This approach may introduce same-source bias or common method variance. The Harman's single factor test is the most widely used technique for examining common method variance. Therefore, this study initially employed this technique to assess common method variance. Unrotated factors principal components analysis was conducted on all variables, extracting five factors with eigenvalues greater than 1. The first factor explained 45.096% of the variance, which is below the critical threshold of 50%, indicating no severe common method variance. However, some studies argue that the Harman's single factor test has the limitation of low sensitivity^[49]. For methodological rigor, this study further utilized the more sensitive CFA Marker Technique^[50]. This technique examined the fit between the multi-factor model CFA and the single-factor model CFA. The results indicated that the chi-square value of the multi-factor model was significantly lower than that of the single-factor model ($p < 0.01$), demonstrating that the fit of the multi-factor model was significantly better than that of the single-factor model. This further indicates that the issue of common method variance in this study is not severe (**Table 2**).

Table 2. Comparison between single-factor model and multi-factor model.

Model	χ^2	DF	$\Delta\chi^2$	ADF	p
Single-factor model	21,394.047	1829			
Multi-factor model	12,901.334	1709	8492.713	120	<0.01

4.3. Differential analysis

This study employed single factor analysis of variance to examine the differences in scores on Orff Schulwerk perception, music learning interests, and music learning performance among college students of different grades (ages). As shown in **Table 3**, based on Levene’s test, the variances in Orff Schulwerk perception ($p < 0.01$) and music learning performance ($p < 0.01$) were found to be heterogeneous. Subsequently, Welch’s test was conducted for mean comparison, and the results indicated non-significant p-values, suggesting no significant differences among college students of different grades in Orff Schulwerk perception and music learning performance. Regarding music learning interests, Levene’s test showed a non-significant p-value, indicating homogeneity of variances. Post hoc comparisons using Scheffé’s method revealed no significant differences in music learning interests among college students of different grades. Therefore, Hypothesis H1 was not supported.

Table 3. Analysis of differences in various variables among college students of different grades.

Variable	Grades	M	SD	Levene’s test	Welch’s test	Post hoc comparison
Orff Schulwerk perception	freshmen	3.583	0.793			
	sophomores	3.591	0.821	5.397**	0.252	-
	juniors	3.657	0.967			
music learning interests	freshmen	3.123	0.918			
	sophomores	3.116	0.878	0.987	-	2.656
	juniors	3.345	0.955			
music learning performance	freshmen	3.794	0.753			
	sophomores	3.815	0.918	5.697**	0.083	-
	juniors	3.767	0.990			

Note: ** $p < 0.01$.

4.4. Descriptive statistics and correlation analysis

Descriptive statistics and correlation analysis of the three variables, namely perceptions of Orff Schulwerk, music learning interest, and music learning performance, were performed. The results are shown in **Table 4**. The mean values of the variables are as follows: perceptions of Orff Schulwerk, $M = 3.607$; music learning interest, $M = 3.183$; and music learning performance, $M = 3.794$; these values indicate that the samples’ performance on each variable was above average. The perceptions of Orff Schulwerk exhibited significant and positive correlations with music learning interest ($r = 0.501, p < 0.001$) and music learning performance ($r = 0.376, p < 0.001$). Music learning interest exhibited a significant and positive correlation with music learning performance ($r = 0.348, p < 0.001$). The coefficients of correlation among the variables ranged from 0.348 to 0.580, indicating that there was a low or moderate correlation between every two variables, and no serious collinearity problem was present^[51,52].

Table 4. Descriptive statistics and correlation analysis.

Variable	M	SD	The perceptions of Orff Schulwerk	Music learning interest	Music learning performance
The perceptions of Orff Schulwerk	3.607	0.853	1		
Music learning interest	3.183	0.918	0.501***	1	
Music learning performance	3.794	0.880	0.376***	0.348***	1

Note: ** $p < 0.01$, *** $p < 0.001$.

4.5. Mediator model test

We tested the mediator model by using SPSS PROCESS. The results are shown in **Table 5**. In Model 1, the perceptions of Orff Schulwerk had a significant and positive effect on music learning performance ($B = 0.388, p < 0.001$), which verified H2; in Model 2, the perceptions of Orff Schulwerk had a significant and positive effect on music learning interest ($B = 0.539, p < 0.001$); in Model 3, the perceptions of Orff Schulwerk exhibited a significant and positive effect on music learning performance ($B = 0.277, p < 0.001$) even after the addition of the mediator variable music learning interest; however, the effect decreased compared with that in Model 1, and music learning interest still had a significant and positive effect on music learning performance ($B = 0.204, p < 0.001$). This result indicated that music learning interest had a partial mediating effect on the influence of the perceptions of Orff Schulwerk on music learning performance, which verified hypothesis H3.

Table 5. The test for mediator model.

Variable	Model 1	Model 2	Model 3
	Music learning performance B (t)	Music learning interest B (t)	Music learning performance B (t)
The perceptions of Orff Schulwerk	0.388 (8.414***)	0.539 (12.015***)	0.277 (5.314***)
Music learning interest	-	-	0.204 (4.209***)
R ²	0.141	0.251	0.175
F	70.793***	144.361***	45.628***

Note: B are unstandardized coefficients; *** $p < 0.001$.

Further, we tested the mediating effects through random and repeated sampling 5000 times using the bias-corrected nonparametric percentile bootstrap method^[53]. The results are shown in **Table 6**. The direct effect value was 0.277 ($LLCI = 0.175, ULCI = 0.380$), the indirect effect value was 0.110 ($LLCI = 0.052, ULCI = 0.172$), and the total effect value was 0.388 ($LLCI = 0.297, ULCI = 0.478$), with the 95% confidence interval for each value not including 0; the mediating effects accounted for 28.351% of the total effects.

Table 6. The bias-corrected nonparametric percentile bootstrap method.

Parameter	Effect	95%LLCI	95%ULCI	Mediating effect size
Direct effect	0.277	0.175	0.380	
Indirect effect	0.110	0.052	0.172	28.351%
Total effect	0.388	0.297	0.478	

Direct effect = Orff pedagogy perception → music learning performance; indirect effect = Orff pedagogy perception → music learning interest → music learning performance.

5. Discussion and recommendations

The present study results show that college students' perceptions of Orff Schulwerk have a significant and positive effect on their music learning interest and performance, implying that students having a better

understanding of Orff Schulwerk tend to deliver better learning performance. Consistent with this finding, the TAM constructed by Davis^[18] suggests that an individual's perception of new technology can affect their job performance; in the field of education, a student's perception of a teaching method can affect their understanding of the key values of the method, thus affecting the positive outcomes of the method^[30,54]. Similarly, Orff Schulwerk can be considered as a teaching technique, and its value lies in the manner it provokes students' feelings about music and encourages them to experience music, thus sparking their music learning interest and improving their music learning performances^[26]. Therefore, if students perceive Orff Schulwerk negatively, the outcomes on their music learning interest and performance will not be positive.

The present study found a partial mediating effect of college students' music learning interest on the influence that their perceptions of Orff Schulwerk have on their music learning performances. According to the TAM, students' perceptions of Orff Schulwerk can influence their understanding of the key values of the method, which in turn influences their music learning interest^[18]. Self-determination theory suggests that students with greater learning interest tend to have higher motivation. They show considerable initiative in the learning process and have the desire to derive pleasure, satisfaction, and fulfillment from the process, which ultimately motivates them to perform well while learning^[36,55]. The results of this study indicate that college students' perceptions of Orff Schulwerk influence their music learning performances by affecting their music learning interest. Therefore, educators need to spark college students' interest in learning music as well as innovate and reform teaching methods to improve their performances.

Our intention of this study, unlike previous studies, is to focus on the effect of Orff Schulwerk on college students' music learning interest and performance in terms of their perceptions of the method. The results indicated that students' perceptions of the method have a significant and positive effect on their music learning interest and performance. In other words, if a teacher uses Orff method to teach music to the same group of students, the students may exhibit different degrees of music learning interest and performance due to differences in their perceptions of the method. These results suggest that educators, when using the Orff method to teach music, should not only master the teaching method in theory and in practice but also advance students' understanding of the teaching objectives, contents, and methods, to ensure positive outcomes and maximize students' music learning interest and performance.

6. Conclusion

In this study, Chinese college students majoring in preschool education were selected as samples, and the relationship between their perceptions of Orff Schulwerk, music learning interest, and performance was explored based on the TAM. The results indicate that college students of different grades show no significant differences in Orff Schulwerk perception, music learning interests, and learning performance, college students' perception of Orff Schulwerk not only directly influences their music learning performance but also exerts an indirect impact on music learning performance through the mediating role of music learning interests. In other words, if a teacher uses Orff method to teach music to the same group of students, the students may exhibit different degrees of music learning interest and performance due to differences in their perceptions of the method. The present study serves as a useful supplement to the theoretical literature on Orff Schulwerk, which fills the gap in literature, extends the application of the TAM to the field of education, and provides a practical reference for colleges and universities to use the method for provoking college students' learning interest and improving their performances.

7. Limitations and future research directions

This study also has some limitations. First, it used only self-reported data of the college students. Although

the Harman's single-factor test showed no sign of serious common method bias, it is necessary to combine different research methods such as interviews and observations in the future to reduce the bias in any single method. Second, the study used cross-sectional data, which indicated the relationship among the variables only at a specific time point. Although cross-sectional studies can provide valuable information to understand the relationship between variables^[56,57], the results of this study should be validated using longitudinal data in the future. Music learning interest and performances of the students were found different in the same Orff Schulwerk environment. Based on the analysis of the TAM and related literature, we speculate that these discrepancies may be related to the students' ability to perceive Orff Schulwerk; however, it is important to determine whether other factors such as demographics or external environment contribute to these discrepancies. Finally, the Technology Acceptance Model originated primarily in the field of computer information technology. Although it has been widely applied in the education sector, the majority of studies have focused on computer-assisted teaching technologies^[39,40]. Further validation is needed to assess its applicability to teaching methods.

Author contributions

Conceptualization, RM and DL; methodology, RM; software, RM; validation, RM and DL; formal analysis, DL; investigation, RM; resources, RM; data curation, RM; writing—original draft preparation, RM; writing—review and editing, RM; visualization, RM; supervision, DL. All authors have read and agreed to the published version of the manuscript.

Acknowledgments

Thank you to the learning platform provided by Gele University in Thailand, as well as to Professor Liu Dongxing for his guidance on the paper. After the completion of the first draft of the paper, we would like to express my gratitude to Professor Liu for organizing and reviewing the article, which successfully completed the writing of the paper.

Conflict of interest

The authors declare no conflict of interest.

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