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The Nexus between music classes and psychological wellbeing: the moderating role of sustainable education policy and teachers innovative support in the post Covid-19 era

Qi Fang^{1*} and Xu Chen²

Abstract

Purpose The study was conducted to address the gaps in literature and improve the psychological well-being of Chinese students. For this purpose, the impact of music classes on psychological well-being of the students was investigated. Furthermore, the study investigated the moderating role of sustainable education policy and teachers' innovative support on the relationship between music classes and students' psychological well-being.

Design The study used a five-point Likert scale and random sampling method was used to collect data from Chinese students in Beijing, China. A useful sample of 1409 respondents was finalized. The study used Partial Least Square – Structural Equation Model (PLS-SEM) for data analysis.

Results This research found that the relationship between music classes and students' psychological well-being in the context of China is significantly accepted. This research also found that the moderating role of sustainable education policy and teachers' innovative support between music classes and the psychological well-being of the students is accepted. The research has contributed a novel framework to the body of literature.

Implications The research findings have theoretical implications that have improved the body of knowledge critically. This research has presented practical ways to advance the psychological well-being of the students. The findings of this research have some future directions for studies in future to contribute to the knowledge.

Keywords Music classes, Psychological well-being, Sustainable education policy, Teacher support

Introduction

The performance of students in their class is increased or decreased based on their strategic actions. When the students are highly motivated to improve their learning performance, they are required to work for the betterment of their approach [27]. Indeed, different kinds of psychological and social problems are limiting the students to increase their performance. When the students are highly motivated, they perform well. However, the demotivation of students is less productive to improve their

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performance critically [19]. The reliability of the student's performance in the class is based on their mental health [28]. Mental health issues reduce the productivity and performance of the students [39]. The accessibility of students to a better learning approach can improve their working methods. Chinese students are facing different problems regarding their learning performance [13] such as lack of focus, mental health issues and lack of motivation to perform well. Furthermore, the above mentioned problems are considered as barriers in learning performance of the Chinese students when they are unable to comprehend properly that results in their low self-esteem. Hence, the learning performance of Chinese students is influenced by these problems [1]. On the other hand, when these students are motivated to perform well, they are required to work on their better mental health. The mental health issues of the students are difficult to tackle.

Psychological well-being plays a crucial role in students' learning processes, particularly in the context of music education [15]. When students are psychologically motivated and emotionally supported, they are more likely to engage effectively in their learning and performance development. Research indicates that students' ability to learn music successfully is closely linked to their psychological state, including factors such as self-efficacy, emotional resilience, and motivation [8]. Many students perceive challenges in their approach to music learning, often due to psychological barriers such as performance anxiety or lack of confidence. To enhance their musical development, students require not only technical training but also psychological support that fosters well-being and reduces emotional distress. Parental encouragement and teacher support are essential in fostering a positive learning environment that promotes psychological resilience and motivation [21]. Indeed, emotional distress and mental health challenges can significantly hinder students' musical performance and overall academic engagement. While physical exercise contributes to general well-being, psychological well-being through strategies such as stress management, mindfulness, and mental skills training is particularly critical in optimizing music learning outcomes [18]. Ultimately, the psychological state of students, including their perceptions, emotions, and cognitive strategies, plays a determining role in shaping their learning experiences and performance in music education.

The studies in the literature have reported that students with negative psychology are not appropriate in their learning and productive performance [22]. The reliability of students working in classroom activities directly depends on their actions to improve their learning. Those

students who are in high spirits to improve their learning are required to work hard for their outstanding performance. The psychological issues of the students are limiting their performance in any work. The stress takes students to different psychological issues that should be managed on time. The effort to better work can significantly improve the performance of learners, but they should be psychologically strong. Psychological weakness reduces the performance and learning of students. Indeed, many students who have appropriate working attitudes get into stress about their work. Therefore, reasonable actions are required to be taken to improve their performance.

While music education acts as therapy to improve the psychological well-being and mental health of the students [25]. Furthermore, educational policies to influence music education in curriculum can be helpful for students to improve their mental health along with studies. However, the support from teachers is also critical for improving their mental health issues [32]. This research is based on the gap in literature as music education is less studied for improving mental health. The existing research work has not comprehensively discussed the relationship between music classes and the psychological well-being of the students. In this way, this research is designed to determine the relationship between music classes and students' psychological well-being in the context of China. This research purpose is also to determine the moderating role of sustainable education policy and teachers' innovative support between music classes and the psychological well-being of the students. The research has contributed a novel framework to the body of literature. The research findings have theoretical implications that have improved the body of knowledge critically. Furthermore, this research has presented practical ways to advance the psychological well-being of students. Finally, the findings of this research have some future directions for studies in future to contribute to the knowledge.

Review of literature

Mood regulation theory is critical because it highlights the way people's mood is changed with emotional regulations [17]. According to this theory, human moods and emotions can be influenced by external and internal factors. This theory asserted that the best way to change the human mood is the external factors and emotional influence [2]. Furthermore, this theory highlighted that the human mood is the effect and the external factor or cause could be anything that is affecting it. Based on the two cause-and-effect dimensions of this research, the following study has underpinned this theory to develop the theoretical framework. Therefore, this research has

considered the music classes to be the cause to affect the psychological well-being of the students. In this way, this study will test the relationship between those two variables based on the theory of mood regulation. However, this study also considered two other moderating variables to support the theory. These two moderating variables are sustainable education policy and teachers' innovative support. Based on this theory, the framework of this research is presented in Fig. 1.

The psychological well-being of the students is necessary to improve their learning performance. Appropriate health behavior is required for students to improve their living standards [4]. The reliability of health opportunities can provide a way for people to their better work. The relationship between people can become strong when they are highly motivated by it [3]. Reasonable actions are required to be taken for people to advance their psychological health. The elements of mental disorders and health effects can reduce the working opportunities for people by influencing their behavior negatively [23].

Music plays a significant role in influencing human behavior, as it is closely linked to psychological processes and emotional regulation. Engaging with music, whether through listening, performing, or structured music therapy, has been recognized as an effective approach to supporting psychological well-being and alleviating emotional distress [5]. Research suggests that music-based interventions can enhance cognitive and emotional functioning, providing individuals with a means to regulate their emotions and improve their overall mental health. The accessibility of music education and therapy offers individuals opportunities to develop emotional resilience, particularly when music engagement is structured in a way that fosters psychological growth and self-expression. The therapeutic effects of music extend to its capacity to reduce stress, enhance mood, and contribute to emotional stability, which underscores its significance as a psychological intervention rather than a conventional health facility [31].

Music is deeply intertwined with human emotions and serves as a motivating factor in various aspects

of life, including learning, social interaction, and self-improvement. Furthermore, exposure to music performance and innovation can shape individuals' cognitive and emotional responses, fostering critical advancements in human behavior [16]. Modern clinical practices increasingly integrate music therapy as a complementary approach to psychological treatment, recognizing its potential to improve mental health outcomes. Ultimately, providing access to music education and therapy can serve as a valuable tool for enhancing psychological well-being and promoting positive behavioral development. Moreover, those people who have less attention to music therapy, have limited opportunities for music learning and reliable performance [38]. The innovation of music and its performance can provide a way forward to people for influencing their behavior in a positive direction. Innovation and music are the key factors used for the psychological advancement of people's minds. Access to reliable music is key to the human active mind and better performance because music influences the thinking approach of human beings. The working of humans for music performance can be strategically improved when they are motivated to music performance. Hypothesis 1: music classes have an impact on psychological well-being

The music classes for the students can be a source of information sharing and their psychological improvement when they are psychologically strong for it. The education policy of any country determines the way students are enrolled in music classes [30]. The impact of music performance on human psychology is critical because music has influenced the emotions of people. Modern educational institutes are required to introduce music classes in every department and school for the students to motivate them for further agenda [24]. The available resource for music performance and music innovation can be a significant factor for students who are learning in different classes. The access of people to music classes motivates them to achieve their goals critically [26]. The reliability of the health behavior of the

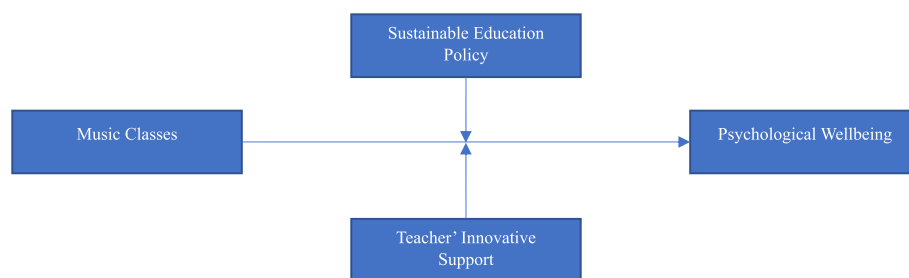


Fig. 1 Theoretical model

students is possible when they are motivated to improve their health with the intervention of music. Music has a key influence on the behavior and understanding of people. The students are also required to have music classes for better psychological growth [14]. Those students who don't have much interest in music classes are required to develop different psychology for taking music classes. Traditional educational policies are not appropriate for the people, but the government is required to focus on advanced and new policies for sustainable education. Indeed, sustainable education is the key to improving the performance of students. When the students are highly motivated to improve their performance, they can develop their understanding in a better direction [7]. However, those students who have little intention to develop their understanding and innovation of music, are required to develop positive working psychology for it. However, the government education department is required to promote music education in schools and colleges [40]. Indeed, the intervention of music is critical to improving the performance of any individual. Music opportunities are motivating people to improve their living standards because of their positive psychological development. On the other hand, those people who have negatively developed their psychology, are required to improve their performance critically [11]. Furthermore, modern clinical treatment includes music therapy that is also influencing the behavior and understanding of people. However, education in music is not complementary for everyone, which is a big limitation in the way of people to motivate them for music therapy. Better music opportunities are leading people to develop their psychology more innovatively.

Sustainable education policies play a crucial role in strengthening the psychological benefits of music education by providing a structured and supportive learning environment [33]. According to Tuastad et al. [36], policies that promote equitable access to music education, integrate mental health support, and emphasize holistic student development contribute to students' overall psychological well-being. For instance, well-designed policies can ensure that music education is incorporated as an essential component of the curriculum, thereby fostering emotional resilience, stress reduction, and cognitive development [20]. Additionally, sustainable policies that allocate resources for music infrastructure, teacher training, and student engagement programs enhance the effectiveness of music education in addressing psychological well-being.

Hypothesis 2: sustainable education policy moderates the relationship between music classes and psychological well-being

The innovative way of music teaching is required to improve the behavior and understanding of people. No doubt, music has a direct relationship with human psychology, but people are required to work hard to improve their mental ability [34]. The responsibility of teachers in any education institute is to teach students about music and its performance. Those people who are highly motivated to improve their mental health can surely get better music performance. The advancements in music are required for people, but those students who have innovative working approaches, are best at music learning [2]. The responsibility of teachers is not only to provide appropriate music learning to the students but they are required to use innovative ways of music teaching. Normally, people in the same class have different types of mindsets, and it becomes hard when you are required to motivate the students to music learning [6]. In this way, the teachers should analyze the learning skills of the students, and work in a better way to advance their performance of music learning. The opportunities related to music learning should be increased over time, and teachers should use innovative working approaches to motivate others to music learning and better performance [37]. The actions of students in music learning should be judged according, and the teachers should develop effective strategies to teach music in a better way. The students are hard to teach many times, but the innovative working approach of the teachers can be used for teaching the students in a better way. The teaching of music can be easier when the students are motivated to play a critical role in learning. The learning performance of the students has an effective impact on their critical performance [26]. Effective student learning in music education is enhanced when teachers provide structured and innovative opportunities for skill development [33]. Access to music classes is particularly beneficial when educators are highly motivated and employ evidence-based teaching strategies to foster students' musical growth. Furthermore, teachers' expertise and pedagogical approaches play a crucial role in shaping students' musical performance and comprehension [36]. Gotthardt et al. [7] suggests that incorporating innovative teaching methods, such as technology-assisted learning, collaborative composition, and improvisation exercises, can significantly enhance students' engagement and creativity in music education. Additionally, integrating digital tools, such as music production software and interactive platforms, can provide students with new avenues for musical exploration and skill refinement [11]. Teachers who adopt student-centered learning approaches, such as problem-based learning and reflective practice, can further promote critical thinking and innovation among students.

According to Xu and Choi [40], teachers'innovative support is a critical factor in maximizing the psychological benefits of music education, as it fosters student engagement, creativity, and emotional resilience. Innovative teaching strategies, such as technology-enhanced learning, collaborative music-making, and adaptive instruction, allow students to experience music in a way that aligns with their individual psychological needs [14]. Teachers who implement creative pedagogical approaches, including improvisation, composition, and student-led performances, can provide students with opportunities for emotional expression and self-discovery, which are essential for psychological well-being [24]. Furthermore, the integration of digital tools, such as music production software and interactive platforms, enables students to engage in personalized and immersive learning experiences that enhance their emotional connection to music.

Hypothesis 3: teachers' innovative support moderates the relationship between music classes and psychological well-being

Methodology

This research is quantitative in nature and used primary data for empirical findings. The data for this research is collected on a Likert scale questionnaire, and the scale items were taken from the existing studies. The five-point measurement items were used in this research from “strongly disagree” to “strongly agree”. The measurement items were taken from the existing studies after determining the validity and reliability. It is necessary to determine the validity and reliability of the research items before final data collection as it ensures that the measurement items used in the questionnaire are valid. However, the face validity of this research questionnaire was also tested by external experts. The language and content of the measurement items were confirmed by external experts. The instruments by McPherson et al. [20] were taken for measuring the impact of music class on psychological well-being, after confirming Cronbach alpha >0.92 and composite reliability >0.77. The instruments were used to measure how music class are helpful for students to improve their psychological well-being. Furthermore, the instruments to measure psychological well-being of the students were taken from Bonneville-Roussy et al. [2] after confirming Cronbach alpha >0.76 and composite reliability >0.78. The instruments were used to measure how the psychological well-being of students is influenced by music. Meanwhile, the instruments to measure sustainable education policy were taken from Tang [34] after confirming Cronbach alpha >0.73 and

Table 1 Demographics

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	705	50.04%
	Female	704	49.96%
Age Group	13–15 years	894	63.47%
	16–18 years	515	36.53%
School Year (2023–2024)	Grade 8	512	36.35%
	Grade 9	498	35.34%
	Grade 10	399	28.31%

composite reliability >0.78. The instruments were used to measure the impact of sustainable education policy for improving the mental health of the students. Finally, the instruments to measure teachers' innovative support were taken from Chou et al. [6] after confirming Cronbach alpha >0.82 and composite reliability >0.87. The instruments were used to measure how innovative and new kind of support by the teachers has an impact on students' psychological well-being.

The data for this research is collected from school students in China. However, there are a lot of schools in Beijing, China. In this way, the area cluster of this research population was the school students in Beijing. These students were targeted to collect the data with a random sampling method. This research has used a survey-based data collection method because the questionnaire was based on reflective measurement items. The consent of the school's administration was taken before the collection of data. The students were also asked to provide data for this research are they were motivated by it. 1800 questionnaires were distributed to the respondents and both male and female school students are targeted. The approach to collect the data was cross-sectional because it is widely used in social sciences research. However, 1653 questionnaires were returned from the respondents. The preliminary analysis was conducted and 244 questionnaires were based on biased answers. In the biased responses, the inconsistency and straight-lining pattern was found in data. The responses with these two above mentioned data issues were removed, to improve the robustness in the findings of the study. Therefore, these items are removed from the final data collection. On the other hand, the final sample of this research is based on 1409 responses. This research has considered Smart PLS 3.0 for data analysis and further findings in the literature. The findings are tested with data normality, measurement model assessment, and structural model assessment.

Table 2 Convergent validity

Variable	Items	Factor loadings	Cronbach's alpha	Composite reliability	Average variance extracted
Music Classes	MC1	0.678	0.846	0.886	0.567
	MC2	0.692			
	MC3	0.813			
	MC4	0.840			
	MC5	0.758			
	MC6	0.723			
Psychological Wellbeing	PW1	0.634	0.845	0.892	0.626
	PW2	0.696			
	PW3	0.879			
	PW4	0.865			
	PW5	0.849			
Sustainable Education Policy	SEPP1	0.848	0.896	0.917	0.613
	SEPP2	0.849			
	SEPP3	0.798			
	SEPP4	0.833			
	SEPP5	0.694			
	SEPP6	0.702			
	SEPP7	0.742			
Teacher's Innovative Support	TIS1	0.850	0.927	0.945	0.775
	TIS2	0.877			
	TIS3	0.895			
	TIS4	0.886			
	TIS5	0.893			

Data analysis and findings

Demographics

Firstly, the demographic data of the study was analyzed and findings are reported in Table 1. The final sample of 1,409 school students was drawn from Grades 8, 9, and 10 in Beijing, China, ensuring a targeted representation of middle and early high school students. Gender distribution was nearly equal (male: 50.04%, female: 49.96%), contributing to the study's generalizability. The majority of participants were aged 13–15 years (63.47%), while the remaining 36.53% were between 16–18 years old. Among the school years included, Grade 8 students accounted for 36.35% of the sample, followed by Grade 9 (35.34%) and Grade 10 (28.31%). This balanced distribution across the three grade levels ensures a robust analysis of how music education influences students' psychological well-being at different stages of their academic journey.

Convergent validity

The research data validity and reliability were also tested. The findings of this research are checked with Cronbach's

alpha value to determine the validity of the data. The threshold for significant Cronbach alpha is >0.70 which is achieved by the findings of this research [9], and the validity of the data is proved. Furthermore, the findings of this research are checked with composite reliability values to determine the reliability of the data. The threshold for significant composite reliability is >0.70 which is achieved by the findings of this research [9], and the reliability of data is proved. Meanwhile, the findings of this research are checked with the average variance extracted value to determine the variance between the research data. The threshold for significant average variance extracted is >0.50 which is achieved by the findings of this research [9, 10, 29, 35], and the variance between research data is proved. Finally, the findings of this research are checked with factor loadings value to determine the validity of the adopted measurement items at the individual level. The threshold for significant factor loadings is >0.60 which is achieved by the findings of this research [9], and the validity of individual-level items is proved. The results are reported in Table 2 and Fig. 2.

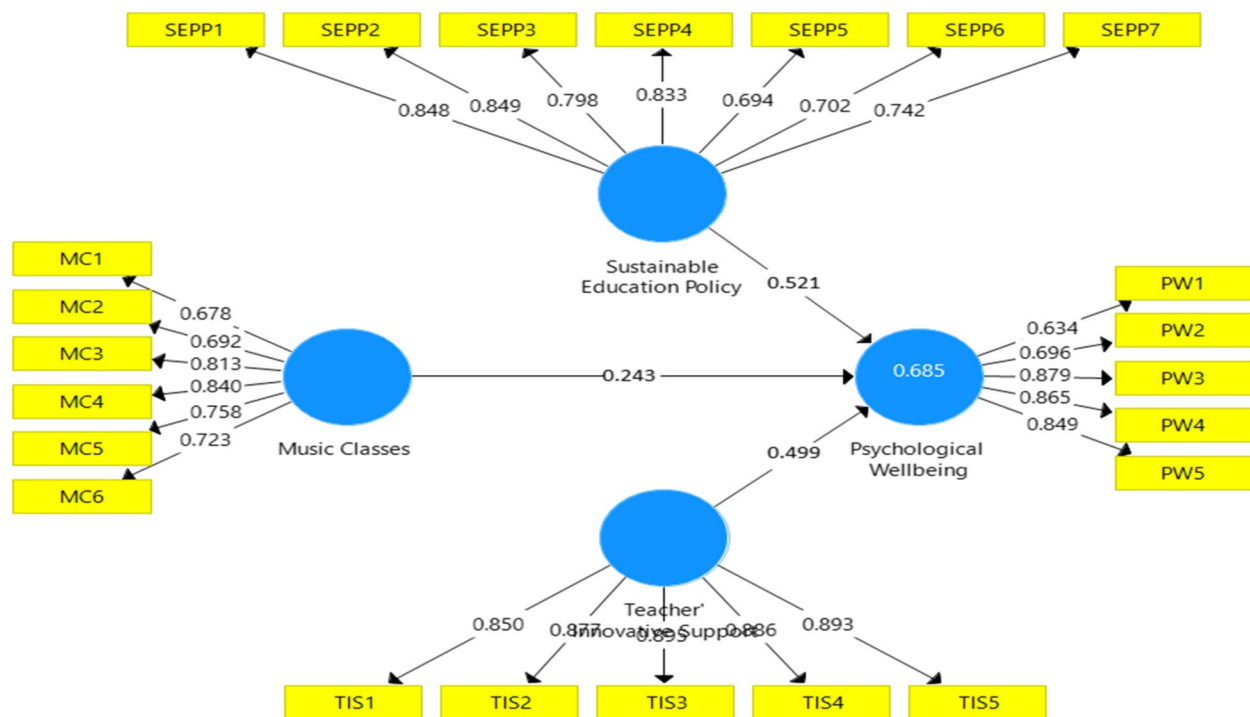


Fig. 2 Measurement model assessment

Discriminant validity

Discriminant validity is also tested to discriminate between the research data. Two reliable methods Heterotrait-Monotrait (HTMT) and cross-loadings are tested to determine discriminant validity. The HTMT method is used to determine the discriminant validity at the variable level. However, the findings of HTMT are significant when no value in the matrix of HTMT is above 0.90 [12]. The data for HTMT is reported in Table 3.

On the other hand, the findings of cross-loadings are taken to determine the discriminant validity at the individual level. These findings are used to determine discriminant validity at the measurement items level. The discriminant validity with cross-loadings is significantly achieved when the findings of the items of one variable are above the findings of measurement items of other variables that are correlated with it [9]. Although the loadings for PW1 and PW2 under the psychological wellbeing construct are relatively lower than those for SEPP1 to SEPP4 under the sustainable education policy construct, PW1 and PW2 still load highest on their intended construct psychological wellbeing compared to all other constructs. Therefore, they fulfill the criteria for discriminant validity.

Furthermore, both items meet the minimum acceptable loading threshold (≥ 0.60), and the psychological wellbeing construct also demonstrates acceptable

values for composite reliability and average variance extracted, supporting its convergent validity. Hence, PW1 and PW2 are retained due to their theoretical relevance and statistical justification. Similarly, SEPP1 to SEPP4 load more strongly on the sustainable education policy construct and do not show cross-loadings with psychological wellbeing, affirming their appropriate placement. The reported data in Table 4 confirmed that this research has achieved significant discriminant validity with cross-loadings.

Gender-based bias analysis using ANOVA

To assess potential bias due to gender differences, a one-way ANOVA was conducted to determine whether psychological wellbeing significantly differs between male and female students. As shown in Table 5, the analysis yielded no significant difference in psychological wellbeing scores between genders ($F(1, 1407) = 1.835, p = 0.162$). This suggests that gender does not introduce bias in the model, ensuring the robustness of the subsequent moderation analyses (see Table 5).

Structural model assessment

The findings of the structural equation model are taken to determine the findings of the hypotheses. The collected data for this study were tested with the structural equation model. The t-values of more than 1.96 are acceptable

Table 3 HTMT

Variables	Music classes	Psychological wellbeing	Sustainable education policy	Teacher's innovative support
Music Classes				
Psychological Wellbeing	0.795			
Sustainable Education Policy	0.784	0.785		
Teacher's Innovative Support	0.670	0.605	0.759	

Table 4 Cross-loadings

Items	Music classes	Psychological wellbeing	Sustainable education policy	Teacher's innovative support
MC1	0.678	0.504	0.460	0.302
MC2	0.692	0.385	0.457	0.409
MC3	0.813	0.566	0.582	0.484
MC4	0.840	0.609	0.624	0.492
MC5	0.758	0.480	0.521	0.539
MC6	0.723	0.469	0.459	0.455
PW1	0.633	0.634	0.565	0.584
PW2	0.423	0.696	0.471	0.212
PW3	0.503	0.879	0.689	0.402
PW4	0.526	0.865	0.682	0.449
PW5	0.491	0.849	0.725	0.459
SEPP1	0.618	0.752	0.848	0.558
SEPP2	0.575	0.726	0.849	0.530
SEPP3	0.520	0.722	0.798	0.406
SEPP4	0.612	0.674	0.833	0.564
SEPP5	0.507	0.455	0.694	0.693
SEPP6	0.450	0.428	0.702	0.679
SEPP7	0.501	0.51	0.742	0.758
TIS1	0.480	0.454	0.647	0.850
TIS2	0.530	0.479	0.686	0.877
TIS3	0.535	0.491	0.646	0.895
TIS4	0.533	0.485	0.628	0.886
TIS5	0.535	0.471	0.670	0.893

Table 5 Gender differences in psychological wellbeing

Source	Sum of squares	Degrees of freedom	Mean square	F ratio	p-value
Between Groups	4.32	1	4.32	1.835	0.162
Within Groups	3309.28	1407	2.352		
Total	3313.6	1408			

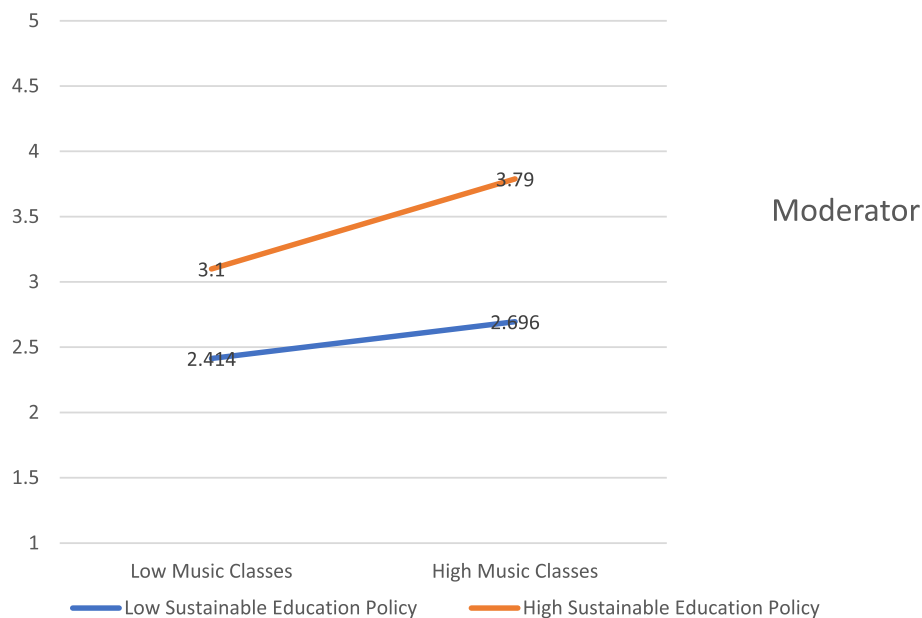
for significant results of the research data [9]. In this way, the data reported in Table 6 demonstrated that significant relationships are developed by this research. The results of this study support hypothesis 1 confirming music classes have a positive impact on psychological well-being. Furthermore, the results of this study support hypothesis 2 confirming sustainable education policy positively moderates the relationship between music classes and psychological well-being. The moderating role of sustainable education policy is to improve and strengthen the relationship between music classes and psychological well-being positively. The results are shown in Fig. 3. Finally, the results of this study support hypothesis 3 confirming teachers' innovative support positively moderates the relationship between music classes and psychological well-being. The moderating role of teachers' innovative support is to improve and strengthen the relationship between music classes and psychological well-being positively. The results are shown in Fig. 4. The results of the structural equation model are reported in Fig. 5 and Table 6.

Predictive relevance

Furthermore, the predictive relevance of the research findings was assessed to evaluate the model's capability to predict endogenous constructs. Predictive relevance (Q^2) is a measure used in structural equation modeling (SEM) to determine how well the independent variables explain the variance in the dependent variables, thereby indicating the model's out-of-sample predictive power [9]. The blindfolding procedure was employed to compute Q^2 , which assesses the model's predictive accuracy by systematically omitting and predicting portions of the data. Additionally, to establish the re-testability of the study, future research can apply the same model to different samples or contexts to examine its consistency and generalizability. The analyzed data ($Q^2 > 0$) reported in Table 7 highlighted that this research has achieved predictive relevance.

Table 6 Structural equation model

Relationship	Original sample	Standard deviation	T statistics	P values
Music Classes—> Psychological Wellbeing	0.243	0.056	4.316	0.000
Moderating Effect 1—> Psychological Wellbeing	0.102	0.050	2.032	0.043
Moderating Effect 2—> Psychological Wellbeing	0.718	0.072	9.934	0.000

**Fig. 3** Moderating effect 1

Discussion and conclusion

Direct relationship between music class and student psychology well-being

The Smart PLS 3 is used in this research for the collection of data or empirical findings. The reported research of this study highlighted that all three relationships are significantly accepted. The direct relationship is tested and the findings pointed out that the impact of music classes is significantly accepted on the psychological well-being of the students. Indeed, this research developed the novel findings that were reported before the findings of this study. However, previous research works have findings supporting this relationship as well. According to Cheng and Lam [5], the development of new music has a significant impact on people's thinking and behavior, which is crucial for advancing human behavior. The use of music therapy in therapeutic settings is increasingly important in changing patient behavior. According to Kegelaers et al. [16], any person's behavior can be affected by whether they have access to music lessons

to give them the best learning possibilities. Any nation's educational policies impact on how pupils are enrolled in music classes. According to Miksza et al. [23], the effect of musical performance on psychological processes in humans is crucial since music affects people's emotions. Every department and school in contemporary educational institutions must offer music lessons to the students to inspire them to pursue their goals. According to Váradi [38], the components of mental illnesses and health efficacy can decrease people's employment chances by adversely affecting their behavior. The availability of healthcare services has a long-term positive impact on people's behavior. According to Calderón-Garrido and Gustems-Carnicer [3], the opportunity to use health facilities is made possible by people's active employment. Indeed, music plays a role that is suited for human behavior since it has a close relationship to human psychology and emotions. According to Shaw and Mayo [31], as people change their behavior from time to time, their emotions are affected over time. When people attend music lessons in the right manner and behave well, there are opportunities for them

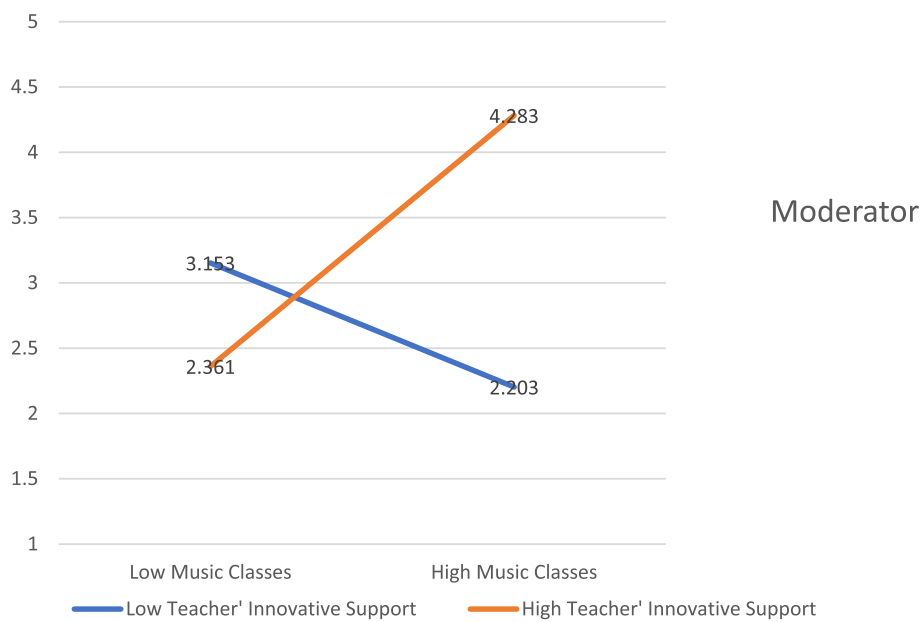


Fig. 4 Moderating effect 2

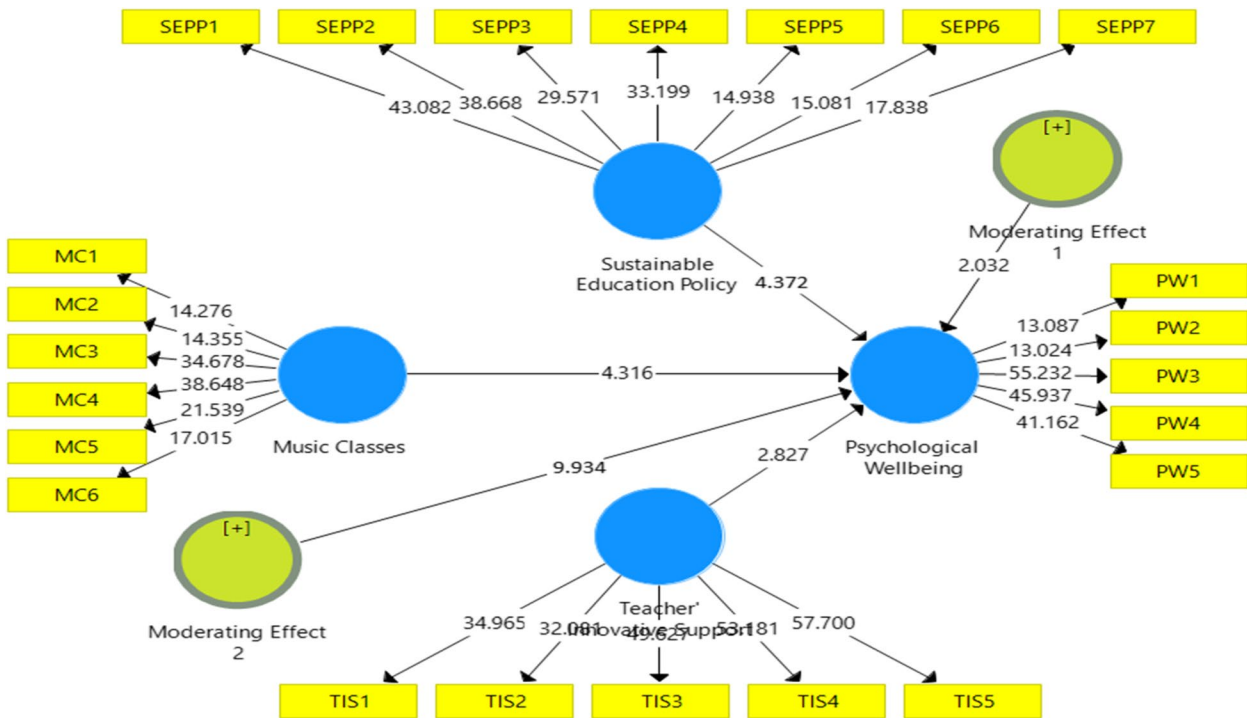


Fig. 5 Structural equation model

to succeed. According to Bonneville-Roussy et al. [2], for human health, musical performance must be reliable. Professors must learn to use creative methods of music instruction in addition to providing pupils with

appropriate music education. People in the same class typically have diverse types of mindsets, making it challenging to inspire the pupils to study music. According to Camlin and and Lisboa [4], students can improve their

Table 7 Predictive relevance

Variable	SSO	SSE	Q ² (= 1-SSE/SSO)
Moderating Effect 1	278	278	
Moderating Effect 2	278	278	
Music Classes	1668	1668	
Psychological Wellbeing	1390	813.077	0.415
Sustainable Education Policy	1946	1946	
Teacher's Innovative Support	1390	1390	

students'performance at learning music, teachers should assess their students'learning abilities. The opportunities for learning music should grow with time, and teachers should employ creative working methods to inspire students to learn music and improve their performances.

Moderating role of sustainable education policy between music class and student psychology well-being

The moderating relationship is tested and the findings pointed out that the impact of music classes is significantly accepted on the psychological well-being of the students with the moderating role of sustainable education policy. Certainly, this research developed the novel findings that were reported before the findings of this study. Yet, the previous research works have findings supporting this relationship as well. According to Hess [13], those who pay less consideration to music therapy have fewer opportunities for dependable performance and music learning. The advancement of music and its performance can give people a path forward for changing their behavior for the better. The two main components employed to improve people's psychological development are innovation and music. According to Mellizo [21], music affects how people think, having access to dependable music is essential for a human active mind and greater performance. When people are driven to perform music, their work for music can be strategically improved. When students are mentally prepared for it, music lessons can be a place for information sharing and their psychological development. Teenagers'psychological health is important for enhancing their academic success. According to Lister et al. [18], students must adopt the proper health behaviors to raise their standard of living. Learners can be challenging to teach on occasion, but teachers can improve instruction by using creative working methods. Teachers who employ novel teaching methods are expected to develop creative solutions for their effective performance and output in the field of music instruction. According to Pendergast and Robinson [28], when students have access to fresh information supplied by their teachers, music instruction can become more reliable. Certainly, teaching

music is a worthwhile profession, but motivating teachers is necessary to influence students'creative performances. According to, the dependability of health opportunities can show people the way forward for improved working. People can develop strong relationships if they are highly driven by their desire. People must take the reasonable steps necessary to improve their psychological well-being. People are motivated to carry out many types of jobs by various human emotions, which are tied to music. According to Valenzuela et al. [37], every person's ability to perform with music might be enhanced when their music has a positive psychological impact on them. Learners who are acquiring knowledge in different classes may benefit greatly from the performance and innovative music resources that are offered. People who can take music lessons are more motivated to succeed in important ways. According to Gustavson et al. [8], when students are inspired to enhance their health through musical intervention, it is possible to rely on their health-related behavior.

Moderating role of teacher' innovative support between music class and student psychology well-being

The moderating relationship is tested and the findings pointed out that the impact of music classes is significantly accepted on the psychological well-being of the students with the moderating role of the teacher's innovative support. Undoubtedly, this research developed the novel findings that were reported before the findings of this study. Up till now, the previous research works have findings supporting this relationship as well. According to Jessiman et al. [15], the way people behave and perceive the world is significantly influenced by music. To promote better psychological development, music classes are also needed for students. Students who aren't interested in music classes must adopt a new mentality to attend them. Individuals that have poor psychological development, on the other hand, need to critically enhance their performance. According to Schiavio et al. [30], music therapy is a component of contemporary therapeutic care and is impacting patients'behavior and conceptualization. However, not everyone can benefit from music instruction, which places a significant barrier in the way of motivating people to seek out music therapy. Better music opportunities are encouraging people to explore newer, more creative avenues in psychology. It is necessary to teach music with a creative approach if you want to change how people behave and see the world. According to Miksza et al. [22], even though music and psychology are directly related, people must put in a lot of effort to develop their mental faculties. When learners are motivated to take on their crucial role in learning, the teaching of music may be made

easier. The pupils' learning performance has a significant impact on their critical performance. According to Váradi [38], classical educational strategies are inappropriate for the people, instead, the government needs to concentrate on innovative and cutting-edge approaches to sustainable education. Sustained education is, in fact, the key to raising student performance. Students can increase their understanding more effectively when they are tremendously motivated to perform better. According to Nápoles [25], students must build a positive working psychology for music even if they do not intend to further their study of or innovations in the field. To support music education in schools and universities, the government's education department is necessary. Music intervention is essential to enhancing anyone's performance. According to Siljamäki and Kanellopoulos [32], when teachers give their students trustworthy opportunities to study in a more advanced style, students' learning can be more effective. Students need to have access to music classes when their instructors are highly motivated and give them dependable possibilities to work more effectively. Teachers' musical performances may be a deciding factor in how well they perform and how well they comprehend. According to Bath et al. [1], the availability of music is inspiring individuals to raise their level of living due to the rise of positive psychology. Any educational institution's teachers are tasked with educating students about music and musical performance. Musicians who are very motivated to enhance their mental health will undoubtedly perform better. According to López-Íñiguez and Bennett [19], people need music to advance, but pupils who creatively approach their work are the greatest at learning music. Students' efforts to learn music should be evaluated following their behaviors, and teachers should devise efficient teaching methods.

Conclusion

To conclude, this study contributes to the literature on psychological well-being by empirically establishing new relationships between music classes, sustainable education policies, teachers' innovative support, and students' psychological well-being in China. The findings confirm that music classes have a significant direct impact on students' psychological well-being, with sustainable education policies and teachers' innovative support acting as critical moderating factors. These relationships, previously unexplored in empirical research, provide novel insights into the role of external influences in enhancing the psychological benefits of music education. Additionally, the study reinforces the relevance of mood regulation theory in explaining the psychological impact of music learning. From a practical perspective, the findings highlight the importance of implementing

sustainable education policies and fostering teacher innovation to maximize the psychological benefits of music education. Strengthening these factors can enhance students' emotional well-being, motivation, and academic performance, underscoring the need for institutional and policy-level support for music education in China.

Theoretical and practical implications

This research has developed a new relationship that is a significant contribution to the literature on psychological well-being. The study has presented three new relationships in the body of knowledge that weren't explored by the previous studies. This research comprehensively reported that the direct impact of music classes is significant on the psychological well-being of students in China. This direct relationship between these variables was not empirically tested by the prior studies available in literature. Furthermore, this study comprehensively reported that there is a moderating impact of sustainable education policies between music classes and the psychological well-being of students in China. Meanwhile, this moderating relationship between these variables was not empirically tested by the prior studies available in the literature. Finally, this study comprehensively reported that there is a moderating impact of teachers' innovative support between music classes and the psychological well-being of the students in China. Meanwhile, this moderating relationship between these variables was not empirically tested by the prior studies available in the literature. These relationships are newly tested and empirically supported. In this way, this study has empirically proved mood regulation theory is significant for music classes and the psychological well-being of the students. Furthermore, the study also highlighted that the external influence of sustainable education policy and teachers' innovative support can improve the impact of music classes on the psychological well-being of the students.

This study has reported that the psychological well-being of students can be improved significantly by taking reasonable actions for it. Indeed, the students are required to be supported by music classes and music learning approaches that can significantly influence them to improve their performance. The available resources for music innovation and teaching in the class can improve the performance of students appropriately. The music learning approach can help the students to get away from the emotional problems that are a significant hurdle in the way of their appropriate performance. Indeed, those students who are less motivated to improve their learning performance are required to take music classes because their bad emotions can be reduced. The availability of sustainable health policies is a significant factor that is influencing the psychological well-being of music

students. The reliability of the students and their performance in class can be increased when they are psychologically strong. To make students psychologically strong, teachers are required to improve their performance of their learning in a better way. The success rate of music classes would be increased for students' psychological well-being when sustainable development policies support these agendas.

Furthermore, educational institutions are required to work on teachers' training programs that are significant to support students for improving psychological well-being. While a large scale of educational policy change is also recommended to integrate music education in curriculum of learning which can support students to perform better with better mental health. Similarly, the teachers are recommended to play their significant role for contributing to students' mental health improvement.

Future directions

No doubt, this research concluded that the relationship between music classes and students' psychological well-being in the context of China is significantly accepted. This research also concluded that the moderating role of sustainable education policy and teachers' innovative support between music classes and the psychological well-being of the students is accepted. In this way, the current study has contributed a novel framework to the body of literature. Similarly, the research findings have theoretical implications that have improved the body of knowledge critically. On the other hand, this research has presented practical ways to advance the psychological well-being of the students. Yet, the findings of this research have some future directions for studies in the future to contribute to the knowledge. The scholars are motivated to determine the moderating role of sustainable health policies between health improvement of the students and music classes. Secondly, the scholars are motivated to determine the moderating role of student mental well-being between the health improvement of the students and student mental attitude. In the same way, the findings of this research should be improved by the scholars by collecting data from respondents from different demography. Future studies should be collected on qualitative data to determine new factors that can influence the psychological well-being of the students.

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Writing—Original Draft, Methodology, Investigation, Conceptualization. Formal Analysis, Data Curation, Writing—Review & Editing. All are done by the authors "Qi Fang and Xu Chen".

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Data availability

All the data within the manuscript.

Declarations

Ethics approval and consent to participate

The study was conducted in accordance with ethical standards and approved by the institutional review board of Zhoukou Vocational and Technical College. Written informed consent was obtained from the parents or legal guardians of all minor participants prior to their involvement in the research. All experiments were performed in accordance with relevant guidelines and regulations described in Declaration of Helsinki.

Consent for publication

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Competing interests

The authors declare no competing interests.

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