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Research Article

Toward Lifelong Learning: Modelling Willingness of Chinese Older Adults Learning Music Via Social Media

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ABSTRACT

Social media provides opportunities for more older adults learn music, which is one of the forefront of lifelong learning. This study aims to gain an in-depth understanding of the factors influencing the participation of older adults in online music education. Using online and offline questionnaires, this study conducted a survey on Chinese older adults who use social media (Tiktok) to learn music experience in Shanghai, and collected a total of 627 valid data. Through structural equation model analysis, the results show that repeated exposure and online comments have significant direct effects on the willingness of older people to participate in online music learning. In addition, perceived usefulness and ease of use were identified as key mediating variables in these relationships. These findings highlight the multiple roles of social media in influencing older adults' willingness to learn, highlighting the importance of community engagement and perceived value in technology adoption. The study further highlights the need for targeted strategies that address the unique needs of older learners to promote lifelong learning and digital inclusion in a rapidly evolving educational environment.

Keywords: music learning, social media, digital education, lifelong education, structural equation model, the older adults

1. Introduction

The digital transformation of music learning means that individuals of all ages are constantly seeking musical mediation and fulfillment, especially in the context of the current rapid development of the digital society (Abad & Barrett, 2023). Online music learning is the process of acquiring musical skills or knowledge through digital platforms that function similarly to social media, i.e. just as social media connects users from different regions together, enabling them to share and interact with content, online music learning also connects learners with educators, resources, and global learners (Ma et al., 2024). These platforms can be specifically designed educational websites or video tutorials on YouTube, similar to various forms of social media (Derges, 2023). This approach to music education offers flexibility and a wealth of resources, as exemplified by the diversity and accessibility of content on social media.

With the improvement of social living standards, people's demand for music is bound to show an increasing trend. Both young and older adults can participate in music learning at any time in their lives, although there may be differences in degree and magnitude (Fajula et al., 2022). Older adults' attitudes toward music are not limited to viewing it as a form of entertainment, but as a means with therapeutic potential to help maintain memory, express emotions, and maintain healthy cognitive function (Johansson, 2022).

For many older adults, music evokes memories of their youth and acts as a bridge to the past. Learning music or an instrument later in life can also inspire new passions, challenge cognitive decline, and foster connections with younger generations(Kim, 2021). Geriatric education is regarded as a distinct and final stage in lifelong education (Park, 2022). The number and proportion of people over 60 years of age is growing at an unprecedented and alarming rate (Shin, 2023). From 2015 to 2035, China will enter a stage of rapid aging, with the older adults increasing from 212 million to 418 million, according to the Research report on the Market and Development Trend of China's Aging population. As of February 2022, the older adults population

of China aged 60 years and above has reached 260 million (Zhao et al. China's population aging problem is becoming increasingly serious, and the demand for education for the older adults is increasing (Vaizman & Harpaz, 2023).

With the rapid advancement of population aging and the rapid development of the Internet industry, China has entered the age of population aging and digitalization (Zhou, 2023).

With the rise of the digital age, social media is becoming more common as a learning tool among all age groups (Rajeh et al., 2021). Especially as social media has become a powerful tool, its influence has extended to various fields including music education (Liu et al., 2023). While numerous studies have explored the role of social media in the education of younger generations, there is still a clear research gap on the impact of social media on the older adults, especially in China, which has a large older population.

China's older adults is growing rapidly, and so is their free time and willingness to learn throughout life. Since the sociocultural experiences, cognitive abilities and digital learning curves of older adults are significantly different from those of younger generations (Makita et al., 2021). Online platforms offer unprecedented opportunities for continuing education, enabling individuals from all walks of life to access a vast array of learning resources (Bozkurt et al., 2023). However, despite extensive exploration of lifelong learning in the digital age, detailed research on older populations in non-Western Settings has been relatively lacking. Given the unique needs and experiences of this population, this research gap presents important challenges.

Social media platforms, such as YouTube, Facebook, and TikTok, have been the subject of extensive research into the potential of education (Yaroslav et al., 2023).The emergence of these platforms has democratized education, providing a rich diversity of learning resources to a global audience. However, current research has mostly focused on younger populations, ignoring the uniqueness of older populations in terms of their learning needs, digital challenges, and engagement patterns (Yang et al., 2022). The existence of this bias points to the need for more inclusive research to cover all age groups. Online platforms offer a wide range of opportunities for music education, covering everything from instrumental tutorials to in-depth theoretical courses, serving a global audience (Arthurs & Petrini, 2024). However, the field remains biased, with much of the research focusing on young learners while ignoring the needs of older learners, especially in non-Western Settings (Aydiner-Uygun, 2020). The research gap is particularly notable given the universal appeal of music.

The way Chinese seniors engage with digital platforms, especially in specific areas such as music education through social media, is an area ripe for exploration. Subtle differences in Chinese society and culture, coupled with differences between the older adults and other age groups in terms of technical abilities and learning preferences, are worthy of in-depth study. This study aims to focus on Chinese older adults' participation in online music education through social media to fill gaps in existing research. Therefore, the purpose of this study is to: 1) explore the factors that influence Chinese older adults' willingness to learn music through social media; 2) To verify the mediating effects of perceived usefulness and perceived ease of use; 3) Provide advice to relevant parties of online music learning for the older adults.

2. Literature review

Cultivating theories that focus on the long-term effects of media on audience perceptions, attitudes, and behaviors (Azaryahu & Adi-Japha, 2022). In music learning for the older adults, the cultivation theory can be used to study the effect of music learning on the attitudes, beliefs and values of the older adults, as well as the influence of music learning on the life experience and happiness of the older adults. In the music learning of the older adults, the cultivation theory can be applied to study the cultivation effect of music learning on the attitudes, beliefs and values of the older adults, so as to improve the acceptance of online music education of the older adults through exposure of music courses and online comments (Back, 2023). Perceived value theory is a behavioral research method in consumer behavior (Bai, 2024). According to this theory, consumers do not calculate the actual value of goods or services, and their decision to purchase goods is based on perceived value rather than actual value (Bailey & Knell, 2024). Social identity theory holds that an individual's self-identity and group identity will affect his/her behavior and attitude (Bakariya et al., 2023). In the music learning of the older adults, social identity theory can be used to study the influence of the older adults' participation in music learning on their social identity, such as belonging to the music learning community, social support and social interaction (Barrett & Welch, 2021). The technology acceptance model describes the mechanisms of technology acceptance and adoption (Barton & Riddle, 2022). In the field of online music education, the technology acceptance model directly affects the public's perceived usefulness and ease of use of online music learning, and the influencing mechanism and influencing factors of older adults' purchase and use of online music education are obtained through the model and related variables. Therefore, depending on the different theoretical approaches, Table 1 introduces the different variables that we will use in this study.

Table 1. Theoretical Basis and Related Variables of Research.

Theoretical Basis	Related Variables	Source
Cultivation Theory	Repeated exposure, Online reviews; Social media receptiveness	Bjorge et al. (2023)

Social Identity Theory	Online Music Learning Willingness	Gomolin et al. (2021)
Educational Technology Acceptance Model	Perceived the usefulness of online music Kiwi (2023) learning; Perceived ease of use of online music learning; Online Music Learning Intention	

According to cultivation theory, the most profound technologies are those that cannot be seen or touched and weave themselves into the details of everyday life until they become part of it (Baughman, 2020). When psychologists study the neuroimaging of the brains of literate and illiterate people, they find that there are different patterns of brain activity in both literate and illiterate people, whether they read or not. People who have grown up with writing and reading technologies have different ways of thinking (Belt, 2023). Similarly, regularly pushing online music education to older users increases their familiarity and acceptance (Bennett, 2023).

Repeated exposure refers to continuous, frequent access to or interaction with an online music learning platform or resource. Perceived usefulness is the belief that using a particular system (in this case, an online music learning platform) will improve performance or bring benefits (Bennett & Moore, 2023). The cultivation theory explains how repeated exposure to online music learning platforms can gradually form and cultivate Chinese older adults' sense of usefulness to such platforms by cultivating familiarity and perception. The belief that using a system (in this case, an online music learning platform) is effortless or straightforward (Bertiaux et al., 2023). Long-term exposure to media can affect perceptions and attitudes (Bhattacharjee et al., 2023). Factors such as learner satisfaction, perceived usefulness, attitudes and subjective norms are believed to influence willingness to learn (Biasutti et al., 2023). Performance expectations, effort expectations, social influence, motivation, and hedonistic motivation have positive effects on willingness to learn Massive Open online courses (Björk et al., 2024). At the same time, social influence, platform ease of use, and external recommendations have also been found to have a significant impact on usage intention (Blackwell & Matherne, 2023).

Perceived usefulness refers to an individual's belief that using a particular system (in this case, an online music learning platform) will improve their performance or bring benefits (Bolger & Murphy, 2023). In this context, media exposure refers specifically to online comments, which have been shown to affect individuals' perceptions and attitudes (Bonassi et al., 2023). In this context, frequent exposure to positive online reviews can help improve the perceived usefulness of online music learning platforms among Chinese seniors. In addition, perceived benefits have been found to have an impact on behavioral intentions (Borja & Camargo, 2024). Through frequent exposure to positive online reviews, individuals gradually form a perception of the ease of use of online music learning platforms (Brook, 2023).

The theory of perceived value emphasizes the importance of perceived benefits to choice and behavior (Buonviri, 2023). Online reviews are seen as a way to communicate the value proposition of online music learning platforms, including their ease of use (Çenberci & Tufan, 2023). Positive reviews contribute to the perceived value of the platform, and ease of use is an integral part of that. Group norms and experience sharing have a positive impact on perception (Chen, 2023), while perceived ease of use is a determinant of technology adoption(Du, 2023).

H1: Repeated exposure has a positive impact on older adults' willingness to use online music learning platforms.

H2: Repeated exposure can have a positive impact on the usefulness of online music learning.

H3: Repeated exposure has a positive impact on the ease of use of online music learning.

H4: Online reviews have a positive impact on the willingness of older adults to use online music learning platforms.

H5: Online reviews have a positive impact on the perceived usefulness of online music learning.

H6: Online reviews have a positive impact on the perceived ease of use of online music learning.

Perceived usefulness refers to learners' perception that learning on online music platforms can improve their learning effectiveness (Kokotsaki & Whitford, 2024). The concept is used to assess individual users' perceptions of the usefulness of information technology. If learners believe that the use of this technology can significantly help their learning and work, they may change their attitudes towards information technology and increase their willingness to use it (Kruse, 2024). However, if learners fail to significantly improve their work and study results after trying the platform and technology several times, they may gradually lose their enthusiasm for information technology and eventually give up using it (MacGlone & Johansen, 2024).

Perceived ease of use refers to the ease with which learners can personally use online music platforms to learn (MacRitchie et al., 2023). As a key factor affecting users' acceptance of technology, perceived ease of use plays an important role in the initial stage of users' exposure to new information technologies (PapazachariouChristoforou, 2023). If users perceive a technology or platform as simple and convenient to use, learners are more likely to explore the platform or resource more actively, which can help improve their work performance (Peguero et al., 2023). Therefore, this study is proposed:

H7: The perceived usefulness of online music learning positively affects the willingness of older adults to use online music learning platforms.
H8: The perceived ease of online music learning positively affects the willingness of older adults to use online music learning platforms.
Individual behavior is often formed after a certain degree of training and cultivation, and the results of such training and cultivation can guide and influence individual behavior, and thus affect their willingness to accept new technologies (Petersen-Overton, 2023). In this process, after repeated contact, accurate information push can help alleviate the dilemma of network users in information choice, quietly change their information cognition and thinking mode, and then affect their vision of information contact. This effect becomes an implicit force shaping user behavior. Therefore, by repeatedly pushing relevant knowledge of music learning to the older adults on social media, the familiarity of the older adults with music education can be cultivated and increased, and the older adults group can perceive the practicability and ease of online music education (Silva et al., 2023), thus influencing their willingness to learn online music. Therefore, this study is proposed
H9: The perceived usefulness of online music learning mediates the relationship between repeated exposure and older adults' willingness to use online music learning platforms.
H10: Perceived ease of use of online music learning mediates the relationship between repeated exposure and older adults' willingness to use online music learning platforms.
In music learning among the older adults, if the older adults are educated and trained in music learning skills, they are more likely to be inclined to use social media for learning, rather than oppose or reject the technology (Vasconcelos et al., 2023). Similarly, if older learners feel the practicality and convenience of online music learning through online comments on social media, they will also tend to use this channel for learning (Woods, 2024). The willingness of older learners to use online learning platforms is influenced by the usefulness of online reviews. Therefore, this study is proposed
H11: Perceived usefulness of online music learning mediates the relationship between online reviews and older adults' willingness to use online music learning platforms.
H12: Perceived ease of online music learning mediates the relationship between online reviews and older adults' willingness to use online music learning platforms.
Based on the above assumptions, this study proposes a model to encourage older adults to use social media for music learning.

3. Research methods

The study used a combination of online and offline questionnaires to survey senior citizens aged between 60 and 74 in the Shanghai area who had used the social media platform for music learning. By contacting the relevant person in charge of Shanghai University for the older adults and the older adults' community, we conducted a questionnaire survey and recovery of the older adults, and organized three staff members with investigation experience to conduct field visits and investigations. During the investigation, 627 valid questionnaires were collected. The questionnaire included a survey of basic information (such as age, gender, education level, familiarity with using social media to learn music), as well as scale questions in Parts II to VIII. These scale questions relate to repeated exposure, online reviews, useful sexual knowledge of online music learning, perceived ease of use of online music learning, and older adults' willingness to study online music. After data collection, we used data analysis software for descriptive statistical analysis, reliability and validity analysis, confirmatory factor analysis, model fit analysis, structural equation modeling and path analysis to process the data. Appendix A indicates the specifically show the scale items.

4. Research results

Table 2 summarizes the basic demographic characteristics and variables of the study subjects, including gender, age, education level, and familiarity with the use of social media platforms (especially Douyin) for music learning.

Table 2. Essential Information.

		Frequency	Percent
Gender	Male	277	44.9
	Female	340	55.1
Age	60-65	283	45.9
	65-70	233	37.8
	70-74	101	16.4
Education level	Below High School	120	19.4
	High School Graduate	156	25.3
	Bachelor's Degree	163	26.4

	Master's Degree	109	17.7
	Doctorate or Higher	69	11.2
Familiarity with using social media platforms such as Douyin to study music	Slightly familiar	172	27.9
	Moderately familiar	161	26.1
	Very familiar	184	29.8
	Extremely familiar	100	16.2

In terms of gender distribution, the results showed slightly more female participants, accounting for 54.2% of the sample (n=340), compared to 45.8% of male participants (n=287). The age range distribution is divided into three grades: people aged 60-65 make up the majority, accounting for 45.1% of respondents (number =283). The 65-70 age group accounted for 38.7% (number =243) and the 70-74 age group accounted for 16.2% (number =101). There are five levels of education. Participants with less than a high school education accounted for 19.4% of the sample (n=120). High school graduates accounted for 25.3% (number =156) and bachelor's degree holders accounted for 26.4% (number =163). In addition, 17.7% (number =109) have a master's degree and 11.2% (number =69) have a doctorate or higher degree. Finally, Table 2 stratifies the respondents' familiarity with learning music on social media platforms. 27.9% (n=172) of respondents were slightly familiar with platforms such as Douyin, 26.1% (n=161) were generally familiar with platforms such as Douyin, 29.8% (n=184) were very familiar with platforms such as Douyin, and 16.2% (n=100) were very familiar with platforms such as Douyin. Table 2 provides a quantitative overview of the sample population and educational background, as well as their proficiency in enriching educational content with modern digital tools in the field of music.

Table 3 reveals Cronbach's Alpha=0.963, which is quite high and is generally considered an excellent indicator of internal consistency. In general, alpha values above 0.9 are considered excellent, 0.8 to 0.9 is good, 0.7 to 0.8 is acceptable, 0.6 to 0.7 is suspect, 0.5 to 0.6 is poor, and below 0.5 is considered unacceptable. Thus, a numerical value of 0.963 validates a high degree of correlation between the items in the tool, suggesting that the items reliably measure a common underlying construct (Verma et al., 2021). In summary, Cronbach's Alpha value shows that the tool used in this study has excellent internal consistency, thus confirming the reliability of the results obtained by this tool and further enhancing the overall validity of the research results.

Table 3. Reliability Statistics.

Cronbach's Alpha	**N of Items**
.963	46

Table 4 reveals that the KMO (Kaiser-Meyer-Olkin) statistic is used to measure the proportion of possible common variance between variables. The index ranges from 0 to 1, and a value closer to 1 indicates that the correlation pattern is relatively compact, so factor analysis should yield unique and reliable factors. In this study, the KMO value was 0.962. This value is very high, indicating that the data set is well suited for factor analysis. In general, a KMO >0.8 is considered excellent, meaning that the data is likely to have good factorability (Verma et al., 2021). Furthermore, in this study, the Bartlett dispersion test statistic is 19,466.616 and 1035 degrees of freedom. The correlation significance value was 0.000. This P-value is well below the generally accepted Alpha level of 0.05, indicating that the test is statistically significant (Verma et al., 2021). This means that the correlation matrix of the data set is significantly different from the same matrix, thus confirming that the data is suitable for factor analysis.

Table 4. KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.962**
Bartlett's Test of Sphericity	Approx. Chi-Square	19466.616
	df	1035
	Sig.	.000

Table 5 uncovers the results of the convergent effectiveness assessment for various latent variables, which are key constructs in the study, are presented. Convergence validity is a subtype of construction validity that measures the extent to which multiple items measure the same construction. It is typically evaluated using three metrics: factor loading, composite reliability (CR), and mean variance extraction (AVE) (Collier, 2020).

Table 5. Convergence Validity.

Latent variables	Observation indicators	Factor loading	CR	AVE
Repeat exposure	Rep1	0.841	0.928	0.683
	Rep2	0.764		
	Rep3	0.839		
	Rep4	0.81		
	Rep5	0.828		
	Rep6	0.871		
Online reviews	Onr1	0.765	0.904	0.612
	Onr2	0.778		
	Onr3	0.786		
	Onr4	0.787		
	Onr5	0.798		
	Onr6	0.778		
Perceived usefulness of online music learning	Pu1	0.793	0.904	0.611
	Pu2	0.767		
	Pu3	0.76		
	Pu4	0.793		
	Pu5	0.783		
	Pu6	0.793		
Perceived ease of use of online music learning	Pes1	0.765	0.913	0.637
	Pes2	0.806		
	Pes3	0.811		
	Pes4	0.812		
	Pes5	0.795		
	Pes6	0.8		
Willingness of older adults to accept online music learning	Wil1	0.788	0.923	0.666
	Wil2	0.752		
	Wil3	0.876		
	Wil4	0.79		
	Wil5	0.786		
	Wil6	0.894		

The factor loading represents the correlation between the observed indicator and the respective latent variable, and in general, a factor load above 0.7 is considered satisfactory, indicating that a considerable proportion of the variance of the observed indicator is explained by the latent variable (Collier, 2020). In all latent variables, the factor loads of all observed indicators are well above the critical value of 0.7. This means that each project is a robust indicator of its own underlying structure, highlighting the relevance of these projects.

Overall reliability (CR) is a measure of the internal consistency of an indicator in reflecting the underlying variables. A CR value above 0.7 is considered acceptable and above 0.8 is considered good (Collier, 2020). CR values for all potential constructs in this study ranged from 0.904 to 0.928, indicating excellent internal consistency. This suggests that the observed indicators can coherently represent their respective underlying constructs.

Average variance extraction (AVE) measures the relationship between the amount of variance contained in the construct and the amount of variance resulting from the measurement error. An AVE value above 0.5 is considered acceptable, indicating that the construct explains more than half of the variance of its indicator (Collier, 2020). All constructs had AVE values above the critical value of 0.5, ranging from 0.611 to 0.683. This proves that a large part of the variance of the observed measure is captured by the underlying construct.

Table 6 presents the results of discriminant effectiveness analysis for seven potential variables, including repeated exposure (Rep), online reviews (On), perceived usefulness of online music learning (Pu), perceived ease of use of online music learning (Pes), and older adults' willingness to accept online music learning (Wil). The discriminant validity evaluation is done by comparing the correlation between the square root of the mean variance extraction (AVE) for each dimension displayed on the diagonal of the matrix and the structure displayed off the diagonal. In this matrix, the diagonal elements (bolded for emphasis) represent the square root of the mean variance extracted value for each latent variable. These values should be greater than the offdiagonal elements of the corresponding rows and columns to meet the criteria for determining validity. This criterion is based on the Fornell-Larcker criterion, which states that the square root of AVE for each factor should be higher than its highest correlation with any other factor. For example, for repeated contact (Rep), the square root of AVE is 0.826. This value is higher than all of its correlation coefficients with other variables

(0.551 with Onr, 0.604 with Pv, etc.), which indicates that Re has discriminative effectiveness with respect to other variables. The story is similar for other latent variables.

Table 6. Distinguish Between Validity Tests.

Latent variables	1	2	3	4	5
Reo	0.826				
Onr	0.551	0.782			
Pu	0.662	0.575	0.643		
Pes	0.576	0.575	0.611	0.552	
Wil	0.649	0.610	0.640	0.608	0.667

(Reo: Repeat exposure; Onr: Online reviews; Pu: Perceived usefulness of online music learning; Pes: Perceived ease of use of online music learning; Wil: Willingness of older adults to accept online music learning)
In general, table 6 shows each construct presents satisfactory discriminant validity. This is because the square root of AVE (diagonal value) is always greater than the correlation between constructs (non-diagonal value). This suggests that each latent variable in the study captures a unique concept or construct without excessive overlap with others. Confirmation of these results is critical to validate the appropriateness of the measured model in the structural equation modeling framework.
Table 7 presents the fitting indicators of the confirmatory factor model, which are critical for evaluating the appropriateness of the structural equation model framework. In the table, several fitting indicators, their reference criteria and corresponding results are included. First, $\chi 2/df=1.851$ (<3), which indicates that the model fits well. Secondly, RMSEA= 0.037 (< 0.08), indicating that the fitting effect is excellent. The goodnessof-fit index (GFI) and the adjusted Goodness-of-Fit Index (AGFI) take into account the variance accounted for by the estimated population covariance, respectively, and are adjusted for degrees of freedom. The results showed that GFI=0.907 and AGFI=0.895, both exceeding their respective reference standards (greater than
0.9 and 0.85). These indexes show that the fitting effect of the model is satisfactory. In addition, the gauge fit index (NFI) and Comparative Fit Index (CFI) compare the chi-square value of the model to the Chi-square value of the empty model, and a value greater than 0.9 indicates a good fit. The values of NFI and CFI in this study were 0.925 and 0.964 respectively, both exceeding the expected critical values and enhancing the robustness of the model. Finally, the Tuck-Lewis index (TLI), which compensates for the complexity of the model, shows a result of 0.961, well above the recommended standard of greater than 0.9.

Table 7. Confirmatory Factor Model Fit Metrics.

Fit index	χ2/df	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference standards	<3	<0.08	>0.9	>0.85	>0.9	>0.9	>0.9
Result	1.851	0.037	0.907	0.895	0.925	0.961	0.964

In summary, the confirmatory factor model shows an excellent fit across all the assessment indicators listed in Table 7 and Figure 1, each of which meets or exceeds the established reference criteria. This comprehensive agreement highlights the robustness of the model and its proper representation of the data and basic theoretical construction within the research framework.
Table 8 shows the results of the fit analysis of the structural equation model (SEM), using several key fit indices for comparison with established reference standards. First, $\chi 2/df=1.879$ (<3), indicating that the model is not overly complex relative to the data. Secondly, RMSEA=0.038 (> 0.08) is satisfactory, indicating that the model is close to the fitting degree of the data. It is worth noting that the values of GFI and AGFI are 0.905 and 0.893, respectively, which are slightly below the reference criteria (>0.9 and >0.85), indicating that the fit is reasonable but not optimal. NFI, TLI, and CFI are relative indices that compare the specified model with the baseline model, and their values in this study are 0.924, 0.960, and 0.963, respectively, all exceeding the ideal critical value of 0.9, indicating that the proposed model is more suitable for the data than the empty model. To sum up, the results in Table 8 show that the fitting effect of SEM and data is generally good, and most indexes meet or close to the recommended standard, thus verifying the practicability of the model in the study.

Table 8. Model Fit Metrics.

Fit index	χ2/df	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference standards	<3	<0.08	>0.9	>0.85	>0.9	>0.9	>0.9
Result	1.879	0.038	0.905	0.893	0.924	0.960	0.963

Hypothesis testing takes a quantitative approach, using path coefficients (β), standard errors (S.E.), critical ratios (C.R.), and p-values to assess the significance and strength of the relationship between the variables. Each hypothesis (H1 through H9) tests a direct path from one construct to the other.
The effects of repeated exposure (Rep) on willingness (Wil), perceived usefulness of social media (Pu), and perceived ease of use of social media (Pes) were examined from H1 to H3. All three hypotheses were supported, with significant β values for the path coefficients (ranging from 0.187 to 0.213) and P values less than 0.001.
H4 to H6 examined the effect of online reviews (On) on the same set of dependent variables. These assumptions are also supported, with significant path coefficients and p-values (0.001 or less).
H8 and H9 examined the effects of perceived usefulness (Pu) and perceived ease of use (Pes) on willingness (Wil), respectively. Both hypotheses are supported, showing a significant positive correlation.

Table 9. Hypothesis Path Estimat β S.E. C.R. P Results s ez

H1	Re→Wo	0.162	0.187	0.040	4.005	***	Supported
H2	Re→Pu	0.290	0.326	0.042	6.963	***	Supported
H3	Re→Pe	0.187	0.213	0.043	4.394	***	Supported
H4	Onr→Wo	0.135	0.145	0.041	3.282	0.001	Supported
H5	Onr→Pu	0.139	0.145	0.044	3.187	0.001	Supported
H6	Onr→Pe	0.203	0.214	0.046	4.403	***	Supported
H8	Pu→Wo	0.180	0.185	0.048	3.772	***	Supported
H9	Pe→Wo	0.186	0.189	0.043	4.285	***	Supported

Structural Equation Model Path Test.
In summary, the path test of the structural equation model confirms the direct effects of all assumptions, showing that each independent variable has a significant effect on the dependent variable. The results highlight the robustness of the relationships within the model, which is reflected in the consistent support of all hypotheses and the statistical significance of the results (most p values < 0.001).
Table 10 presents the results of the mediation analysis using the guided approach. Mediating analysis aims to test whether the influence of independent variables on dependent variables is influenced by one or more mediating variables. A distribution of effect sizes was generated using the Bootstrap method with a deviation corrected 95% confidence interval (CI). From this distribution, 95% confidence intervals can be constructed. If the confidence interval contains zero, the effect is not statistically significant. The 95% CI of the bias correction takes into account the bias in confidence interval estimates due to the sample data.

Table 10. Mediation Effect Bootstrap Test.

Hypothesis	**Mediation path**	**Effect size**	**SE**	**Bias-Corrected 95%CI**		**Results**
H10	Re→Pu→Wo	0.052	0.022	0.014	-0.104	Supported
H11	Onr→Pu→Wo	0.025	0.017	0.003	-0.073	Supported
H12	Re→Pe→Wo	0.035	0.016	0.010	-0.078	Supported
H13	Onr→Pe→Wo	0.038	0.018	0.010	-0.084	Supported

The upper and lower 95% interval of "Rep→Pu→Wil" mediation path is [0.014, 0.104], excluding 0, indicating that Pu has a significant mediating effect between Re and Wo with an effect value of 0.052. Therefore, H10 is supported.
The upper and lower 95% interval of the "On→Pu→Wil "mediation path is [0.003, 0.073], excluding 0, indicating that perceived usefulness has a significant mediating effect between online review and willingness with an effect value of 0.025. Therefore, H11 is supported.
The upper and lower 95% interval of "Rep→Pes→Wil" is [0.010, 0.078], excluding 0, indicating that perceived ease of use has a significant mediating effect between repeated exposure and willingness with an effect value of 0.035. Therefore, H12 is supported.
The upper and lower 95% interval of "On→Pes→Wil" is [0.010, 0.084], excluding 0, indicating that perceived ease of use has a significant mediating effect between online review and willingness with an effect value of 0.038. Therefore, H13 is supported.
After completing the structural equation model, professional software was used to fit and measure the model, and the estimated value of the path, standardized path coefficient, standard error (S.E.), critical ratio (C.R.) value and significance (P) value were obtained. Figure 1 models the willingness of Chinese older adults learning music via social media

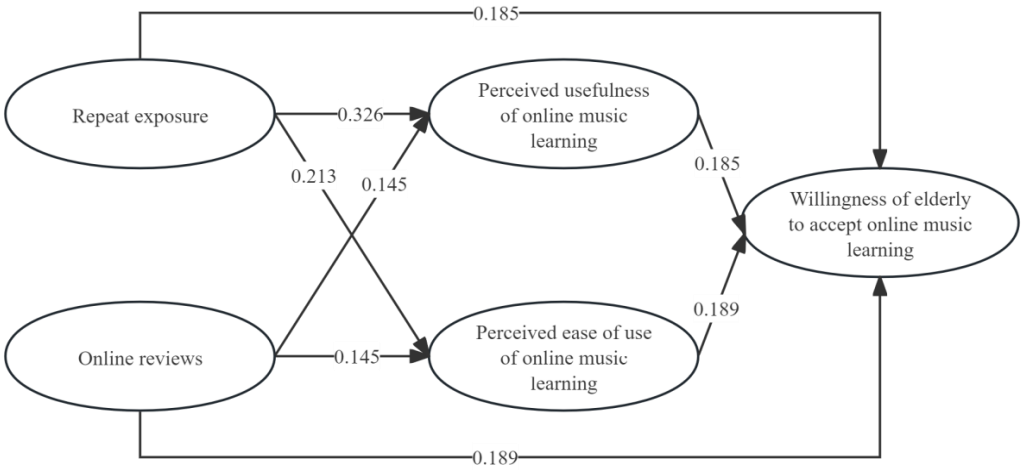

Figure 1. Model of Willingness of Chinese Older Adults Learning Music Via Social Media

5. Discussion and conclusion

5.1 Theoretical implication

This study combines cultivation theory, perceived value theory, social identity theory, and technology acceptance model (TAM) to explain the willingness of Chinese seniors to learn music online. The findings provide robust support for the hypotheses posited in the study, which examined the effects of repeated exposure and online reviews on consumers' willingness to engage with social media platforms, mediated by perceived usefulness and perceived ease of use. The study employed structural equation modeling to quantitatively analyze the relationships among the variables, revealing significant path coefficients and p-values across multiple hypotheses.

Firstly, the H1 to H3 investigated the influence of repeated exposure on willingness, perceived usefulness of social media, and perceived ease of use of social media. The results demonstrated significant positive correlations, indicating that repeated exposure positively impacts consumers' willingness to engage with social media platforms, mediated by their perceptions of usefulness and ease of use. Similarly, hypotheses H4 to H6 explored the effect of online reviews on the same set of dependent variables, with significant path coefficients indicating that online reviews significantly influence consumers' perceptions of social media's usefulness and ease of use, ultimately impacting their willingness to engage.

Moreover, H8 and H9 examined the direct effects of perceived usefulness and perceived ease of use on willingness, respectively, both of which were supported by significant positive correlations. Additionally, the study investigated the mediating effects of perceived usefulness and ease of use on the relationship between repeated exposure and online reviews with willingness to engage with social media platforms. The mediation analyses revealed significant indirect effects, highlighting the role of perceived usefulness and ease of use as mediators in the relationship between exposure to social media content and consumers' willingness to engage.

The mediation analyses conducted for hypotheses H10-H13 provide valuable insights into the underlying mechanisms through which social media influences consumers' willingness to engage with online music learning platforms. Firstly, hypothesis H10 is supported by the significant mediating effect of perceived usefulness between repeated exposure and willingness, with an effect value of 0.052. This suggests that individuals' perceptions of social media's usefulness play a crucial role in mediating the relationship between their exposure to online content and their willingness to engage with music learning platforms. Similarly, H11 is supported by the significant mediating effect of perceived usefulness between online reviews and willingness, with an effect value of 0.025. This indicates that consumers' perceptions of the usefulness of social media platforms, influenced by online reviews, significantly impact their willingness to participate in online music learning activities. Furthermore, H12 and H13 are both supported by the significant mediating effects of perceived ease of use between repeated exposure and willingness, as well as between online reviews and willingness, respectively. These findings highlight the importance of individuals' perceptions of the ease of use of social media platforms in shaping their willingness to engage with online music learning resources. Overall, the results of H10-H13 underscore the significance of perceived usefulness and ease of use as mediating factors in the relationship between social media exposure, online reviews, and consumers' willingness to participate in online music learning activities.

The research findings demonstrate a robust understanding of social media's influence on online music learning. Wang (2023) takes rural Chinese older adults' use of social media as a learning tool provides insights into the broader landscape of technology-mediated learning experiences. However, this research specifically

delves into the unique context of music education and its interaction with social media platforms, offering specialized insights into a niche area of study within this broader field. Similarly, while Liu and Luo (2023) use cross-cultural examination of music sharing intentions on social media sheds light on cultural differences in online behaviors, this study surpasses mere descriptive analysis by exploring the underlying mechanisms driving individuals' willingness to engage with online music learning platforms through social media. Additionally, Tan et al. (2023) identify the active learning among Chinese senior immigrants in Canada highlights the importance of lifelong learning initiatives, albeit not directly related to social media. However, we extend this discourse by demonstrating how social media platforms can effectively facilitate lifelong learning experiences, particularly in the domain of music education. Therefore, while the literature offers valuable insights into various aspects of social media usage and learning practices, this research significantly contributes to the understanding of social media's role in online music learning by offering specialized and nuanced insights into this specific area of study.

Furthermore, this study indicates the intricate relationships between social media exposure, perceived usefulness, perceived ease of use, and consumers' willingness to engage with online music learning platforms. In comparison, the literature examined provides insights into social media usage and learning practices within specific demographic groups or cultural contexts. This research goes beyond descriptive analysis by quantitatively analyzing the mediating effects of perceived usefulness and ease of use, offering a deeper understanding of the factors driving consumers' willingness to participate in music education activities online. Therefore, this research significantly enriches the literature by providing specialized insights into the intersection of social media and online music learning, thus offering valuable contributions to this specific area of study.

5.2 Practical implication

The research findings provide valuable practical implications for various stakeholders involved in online music education and social media platforms. For music educators and online learning platforms, understanding the significant influence of social media exposure, perceived usefulness, and ease of use on consumers' willingness to engage with online music learning is crucial. Educators can leverage social media channels to disseminate educational content, engage with students, and foster a supportive online learning community. By creating user-friendly platforms that emphasize the utility and ease of use of their services, online learning platforms can enhance user experience and attract more participants to their music education programs. Additionally, for marketers and content creators, recognizing the impact of online reviews on consumers' perceptions of social media's usefulness and ease of use presents an opportunity to strategically manage and leverage user-generated content to enhance brand reputation and consumer engagement. Overall, the research underscores the importance of optimizing social media strategies and platform design to facilitate meaningful and effective online music learning experiences, ultimately benefiting both educators and learners in the digital age.

5.3 Limitations and future study

Although this study has made important contributions in related fields, there are also some limitations, which provide a development direction for future research. The scope of this study is limited to Chinese olderadults, so future studies could explore similar models in different cultural and demographic contexts to verify the generality of the findings. In addition, due to the cross-sectional design used in this study, there are limitations of causal relationships, and longitudinal studies can better reveal how these relationshipshave evolved over time. Although this study included several important variables, future studies could consider introducing more factors, such as an individual's ability to innovate, digital readiness, or emotional factors, to gain a more complete picture. As technology continues to evolve, future research should also consider the impact of emerging digital platforms and learning tools on older adults' willingness to learn. Practical interventions based on the findings can be further implemented and studied to verify the effectiveness of targeted strategies in promoting online music learning in older adults.

5.4 Conclusion

In conclusion, the research findings provide valuable insights into the complex interplay between social media exposure, perceived usefulness, perceived ease of use, and older adults' willingness to learn music via social media. By examining these relationships through a structured framework, the study advances the exploration of the mechanisms driving older adults' participation in music education activities online. The significant mediating effects of perceived usefulness and ease of use highlight the importance of creating userfriendly and valuable experiences on social media platforms for facilitating online music learning. These findings offer practical implications for educators, online learning platforms, marketers, and content creators, emphasizing the importance of optimizing social media strategies and platform design to enhance user engagement and foster a supportive online learning community. Overall, the research contributes to the broader discourse on technology-mediated learning experiences and underscores the potential of social media as a powerful tool for facilitating meaningful and effective music education in the digital age.

Authors' Contributions

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Appendix A1. The scale of this study.

Construct	Items	Source
Repeated exposure	A1. Douyin provides the relevant music information, services, or products I need.	Dijksterhuis & Smith (2002);
	A2. I often use Douyin to revisit and absorb the music	
	knowledge they recommend.	Fang et al. (2020)
	A3. I'm interested in music knowledge repeatedly showed in Douyin.	
	A4. Douyin frequently features content related to music knowledge.	
	A5. Douyin offers user-friendly system instructions and navigation bars for learning music.	
Online reviews	B1. I intend to post a message in the comment section of Douyin to enhance my music knowledge learning.	Zhang et al. (2014); Mudambi & Schuff (2010)
	B2. The comments in Douyin's music section have been beneficial to me.	
	B3. I regularly post messages in the Douyin comment section to share my experiences with learning music.	
	B4. I believe that most of the comments regarding music knowledge on Douyin are accurate.	
	B5. The online reviews on Douyin offer the information and services essential for my music learning journey.	
	B6. I regularly go through the comments in the music learning section on Douyin.	
Perceiving usefulness	D1. Utilizing Douyin improves the efficiency of my music learning process.	Davis (1989); Venkatesh & Davis (2000)
	D2. Douyin enables me to access the music learning information quickly and effortlessly I need.	
	D3. Douyin helps me accomplish music learning tasks more swiftly.	

	D4. I find Douyin to be a valuable platform for learning music.	
	D5. Douyin provides me with a platform to demonstrate my skills and talents in music learning.	
	D6. Douyin platforms assist me in connecting with new people while I'm learning music.	
Perceived ease of use	F1. I find learning music through Douyin to be a straightforward and enjoyable activity.	Davis (1989); Venkatesh et al. (2003)
	F2. I can easily acquire music knowledge on Douyin.	
	F3. Learning music through Douyin doesn't require much effort, in my opinion.	
	F4. In general, I find learning music through Douyin to be quite easy.	
	F5. I know how to utilize Douyin to access information related to music learning.	
	F6. The content and format of music learning on Douyin are straightforward and easy to grasp.	
	F7. Navigating to the music knowledge I wish to learn is straightforward, thanks to the well-organized table of contents and clear instructions on the Douyin interface.	
Willingness to learn	G1. I intend to utilize Douyin for music learning in the	Venkatesh et al.
music via social media	future.	(2012); Chen & Chan (2014)
	G2. I'd like to suggest to people in my circle to use Douyin for music learning.	
	G3. If I've used it before, I'll continue using Douyin for music learning.	
	G4. I plan to continue using Douyin for music learning in the future.	
	G5. I would recommend the Douyin platform I'm currently using for music learning to my friends and acquaintances.	
	G6. Even if there are other similar social media platforms to choose from, I would still opt for Douyin to continue my music learning.	

Reference

1. Abad, V., & Barrett, M. S. (2023). Laying the foundations for lifelong family music practices through Music Early Learning Programs. Psychology of Music, 51(4), 1059-1079, Article 0305735620937780. https://doi.org/10.1177/0305735620937780
2. Arthurs, Y., & Petrini, K. (2024). Musicians' views on the role of reading music in learning, performance, and understanding. Musicae Scientiae, 28(1), 3-17. https://doi.org/10.1177/10298649221149110
3. Aydiner-Uygun, M. (2020). Achievement goal orientations of students studying instrument education as predictors of their learning approaches. Music Education Research, 22(2), 130-144. https://doi.org/10.1080/14613808.2020.1713735
4. Azaryahu, L., & Adi-Japha, E. (2022). "MusiMath"-a music-based intervention program for learning patterns and symmetry. Journal of Experimental Education, 90(2), 319-343. https://doi.org/10.1080/00220973.2020.1799316
5. Back, L. (2023). What sociologists learn from music: identity, music-making, and the sociological imagination. Identities-Global Studies in Culture and Power. https://doi.org/10.1080/1070289x.2023.2268969

6. Bai, X. E. (2024). Exploring music students' resistance to innovation as a moderator in the relationship between e-learning adoption and academic performance. Psychology in the Schools. https://doi.org/10.1002/pits.23181
7. Bailey, E., & Knell, E. (2024). Collaborative Service-Learning: Sharing Music in a Preschool Classroom. Journal of Music Teacher Education, 33(2), 86-103. https://doi.org/10.1177/10570837231189823
8. Bakariya, B., Singh, A., Singh, H., Raju, P., Rajpoot, R., & Mohbey, K. K. (2023). Facial emotion recognition and music recommendation system using CNN-based deep learning techniques. Evolving Systems. https://doi.org/10.1007/s12530-023-09506-z
9. Barrett, M. S., & Welch, G. F. (2021). Music early learning programs: Enduring outcomes for children and their families. Psychology of Music, 49(5), 1226-1241, Article 0305735620944232. https://doi.org/10.1177/0305735620944232
10. Barton, G., & Riddle, S. (2022). Culturally responsive and meaningful music education: Multimodality, meaning-making, and communication in diverse learning contexts. Research Studies in Music Education, 44(2), 345-362, Article 1321103x211009323. https://doi.org/10.1177/1321103x211009323
11. Baughman, M. (2020). Mentorship and Learning Experiences of Preservice Teachers as Community Children's Chorus Conductors. Journal of Music Teacher Education, 29(2), 38-52. https://doi.org/10.1177/1057083719876116
12. Belt, C. (2023). Undergraduate Music Therapy Students' Perspectives on Curricular Self-Experiences. Music Therapy Perspectives, 41(2), 144-151. https://doi.org/10.1093/mtp/miad002
13. Bennett, C. (2023). A Grounded Theory of Culturally Responsible Music Teaching. Journal of Research in Music Education, 71(2), 229-259. https://doi.org/10.1177/00224294231165681
14. Bennett, C., & Moore, K. S. (2023). Norm-disruptive learning and music teacher competency development: A thematic synthesis. International Journal of Music Education, 41(1), 20-37, Article
15. 02557614221093699. https://doi.org/10.1177/02557614221093699
16. Bertiaux, A., Gabrielli, F., Giraud, M., & Levé, F. (2023). Associations Between Music Training and the Dynamics of Writing Music by Hand. Musicae Scientiae, 27(1), 247-259, Article 1029864920972145. https://doi.org/10.1177/1029864920972145
17. Bhattacharjee, M., Prasanna, S. R. M., & Guha, P. (2023). Clean vs. Overlapped Speech-Music Detection Using
a. Harmonic-Percussive Features and Multi-Task Learning. Ieee-Acm Transactions on Audio Speech and Language Processing, 31, 1-10. https://doi.org/10.1109/taslp.2022.3164199
18. Biasutti, M., Philippe, R. A., & Schiavio, A. (2023). E-learning during the COVID-19 lockdown: An interview study with primary school music teachers in Italy. International Journal of Music Education, 41(2), 256-270. https://doi.org/10.1177/02557614221107190
19. Bjorge, H., Halvorsrud, L., & Goyal, A. R. (2023). Always on alert: How relatives of family members with dementia experience the transition from home to permanent nursing home placement. Nursing Open, 10(9), 6300-6308. https://doi.org/10.1002/nop2.1877
a. Björk, C., Granfors, M., & Ruthmann, S. A. (2024). Learning music theorising through inspiration and curiosity. Insights from emergent lesson design in an upper secondary school in Finland. British Journal of Music Education, 41(1), 3-19, Article Pii s0265051723000207. https://doi.org/10.1017/s0265051723000207
20. Blackwell, J., & Matherne, N. (2023). Developing feedback skills in preservice music teachers. International Journal of Music Education. https://doi.org/10.1177/02557614231163237
21. Bolger, L., & Murphy, M. (2023). Understanding the impact of international music therapy student placements on music therapy practice and professional identity. Nordic Journal of Music Therapy. https://doi.org/10.1080/08098131.2023.2268692
22. Bonassi, G., Lagravinese, G., Bove, M., Bisio, A., Botta, A., Putzolu, M., Cosentino, C., Mezzarobba, S., Pelosin,
a. E., & Avanzino, L. (2023). How Music Moves Us: Music-induced Emotion Influences Motor Learning. Neuroscience, 526, 246-255. https://doi.org/10.1016/j.neuroscience.2023.06.023
b. Borja, M. A., & Camargo, J. E. (2024). Music software with a Machine Learning-based feedback system as an alternative for initial piano study in children. Inteligencia Artificial-Iberoamerical Journal of Artificial Intelligence, 27(73), 92-110. https://doi.org/10.4114/intartif.vol27iss73pp92-110
23. Bozkurt, A., Gjelsvik, T., Adam, T., Asino, T. I., Atenas, J., Bali, M., Blomgren, C., Bond, M., Bonk, C. J., & Brown, M. (2023). Openness in education as a Praxis: From individual testimonials to collective voices.
a. Open Praxis, 15(2), 76-112.
24. Brook, T. (2023). Music, Art, Machine Learning, and Standardization. Leonardo, 56(1), 81-86. https://doi.org/10.1162/leon_a_02135
25. Buonviri, N. O. (2023). Educating Ears: The Role of Sound in Music Learning. Music Educators Journal, 110(2), 30-36. https://doi.org/10.1177/00274321231202621
26. Çenberci, S., & Tufan, E. (2023). Effect of music education based on Edwin E. Gordon's Theory on children's developmental music aptitude and social emotional learning skills. International Journal of Music Education. https://doi.org/10.1177/02557614231196973

27. Chen, J. C. W. (2023). Mobile learning as deep learning: Content analysis of in-service primary school music teachers' lesson plans in mobile music creation. International Journal of Music Education.
28. https://doi.org/10.1177/02557614231191520
29. Collier, J. E. (2020). Applied structural equation modeling using AMOS: Basic to advanced techniques. Routledge.
30. Derges, J. D. (2023). Children's informal music learning: A phenomenological inquiry. International Journal of Music Education, 41(4), 544-556. https://doi.org/10.1177/02557614221130435
31. Du, X. W. (2023). Application of multi-core learning feature fusion and edge computing in music quality education. International Journal of System Assurance Engineering and Management. https://doi.org/10.1007/s13198-023-02168-9
32. Fajula, E., Mirabet, L., Vilaplana, A., & Viñas, A. (2022). Music, learning and emotions. Llengua Societat I Comunicacio(20), 71-79. https://doi.org/10.1344/lsc-2022.20.7
33. Gomolin, I. H., Krichmar, G., Siskind, D., Divers, J., & Polsky, B. (2021). Absence of COVID-19 Disease Among
a. Chronically Ventilated Nursing Home Patients. Journal of the American Medical Directors Association, 22(12), 2500-2503. https://doi.org/10.1016/j.jamda.2021.09.019
34. Johansson, M. (2022). Improvisation in traditional music: learning practices and principles. Music Education Research, 24(1), 56-69. https://doi.org/10.1080/14613808.2021.2007229
35. Kim, J. H. (2021). Music teachers' understanding of blended learning in Korean elementary music classes. Music Education Research, 23(3), 311-320. https://doi.org/10.1080/14613808.2020.1862776
36. Kiwi, M. (2023). Away from Home or Returned Home? What Iranian Participants with Dementia Experience while Living in a Culturally Profiled Nursing Home in Sweden. Journal of Cross-Cultural Gerontology,
37. 38(4), 343-370. https://doi.org/10.1007/s10823-023-09490-6
38. Kokotsaki, D., & Whitford, H. (2024). Students' attitudes to school music and perceived barriers to GCSE music uptake: a phenomenographic approach. British Journal of Music Education, 41(1), 31-50.
39. https://doi.org/10.1017/s0265051723000426
40. Kruse, N. B. (2024). Inservice Music Teachers' Vernacular Practices: A Self-Study of Curricular Application. Journal of Music Teacher Education, 33(2), 29-47. https://doi.org/10.1177/10570837231182400
41. Liu, C., Hwang, G.-J., Tu, Y.-f., Yin, Y., & Wang, Y. (2023). Research advancement and foci of mobile technology-supported music education: a systematic review and social network analysis on 2008-2019 academic publications. Interactive Learning Environments, 31(7), 4535-4554.
42. Liu, Q., & Luo, M. (2023). Cross-Cultural Examination of Music Sharing Intentions on Social Media: A
a. Comparative Study in China and the United States. International Journal of Human–Computer
43. Interaction, 39(6), 1303-1313. https://doi.org/10.1080/10447318.2022.2062838
44. Ma, R., Deeprasert, J., & Jiang, S. (2024). Social Media Affecting Online Music Learning Willingness of Chinese
45. Older Adults. Kurdish Studies, 12(1), 1380-1403. https://doi.org/ https://doi.org/10.58262/ks.v12i1.095
46. MacGlone, U. M., & Johansen, G. G. (2024). Teaching free improvisation: European higher music education teachers' conceptual tools. International Journal of Music Education. https://doi.org/10.1177/02557614231212579
47. MacRitchie, J., Chmiel, A., Radnan, M., Taylor, J. R., & Dean, R. T. (2023). Going online: Successes and challenges in delivering group music instrument and aural learning for older adult novices during the COVID-19 pandemic. Musicae Scientiae, 27(3), 596-615, Article 10298649221097953. https://doi.org/10.1177/10298649221097953
48. Makita, M., Mas-Bleda, A., Stuart, E., & Thelwall, M. (2021). Ageing, old age and older adults: A social media analysis of dominant topics and discourses. Ageing & Society, 41(2), 247-272.
49. Papazachariou-Christoforou, M. (2023). Incorporation of informal music learning practices in a primary classroom in Cyprus. International Journal of Music Education, 41(2), 330-341, Article
50. 02557614221096149. https://doi.org/10.1177/02557614221096149
51. Park, Y. J. (2022). Online music education for sustainable development: Analysis of music learning videos in e-Hakseupteo. International Journal of Music Education, 40(3), 340-351, Article
52. 02557614211058800. https://doi.org/10.1177/02557614211058800
53. Peguero, F. L. R., Lorenzino, L., & Low, B. (2023). The many ways of Puerto Rican community music. International Journal of Music Education. https://doi.org/10.1177/02557614231188127
54. Petersen-Overton, K. J. (2023). The Harmonious Classroom: Teaching Political Theory With Period Music.
55. Journal of Political Science Education, 19(4), 545-564. https://doi.org/10.1080/15512169.2023.2171298
56. Rajeh, M. T., Sembawa, S. N., Nassar, A. A., Al Hebshi, S. A., Aboalshamat, K. T., & Badri, M. K. (2021). Social media as a learning tool: Dental students' perspectives. Journal of Dental Education, 85(4), 513-520.

57. Shin, J. (2023). Korean preservice music teachers' perceptions of blended learning in music education course. International Journal of Music Education. https://doi.org/10.1177/02557614231182166
58. Silva, C. D., Marinho, H., & Fiorini, C. (2023). #100daysofpractice: Selection and adaptation of self-regulated learning strategies in an online music performance challenge. Psychology of Music, 51(3), 667-681. https://doi.org/10.1177/03057356221108762
59. Tan, W., Zhu, Y., Wu, L., Hou, J., Yi, J., Qi, T., & Zhang, W. (2023). Virtual volunteering, community support, and self-care in Chinese communities in Canada. Interdisciplinary Nursing Research, 2(3). https://journals.lww.com/inr/fulltext/2023/08000/virtual_volunteering,_community_support,_and.8.aspx
60. Vaizman, T., & Harpaz, G. (2023). Retuning music teaching: Online music tutorials preferences as predictors of amateur musicians' music self-efficacy in informal music learning. Research Studies in Music Education, 45(2), 397-414. https://doi.org/10.1177/1321103x221100066
61. Vasconcelos, M. J., Caspurro, H., & Costa, N. (2023). Problem-based Learning: Composing in the classroom as a music learning challenge. Revista Electronica De Leeme(52), 111-140. https://doi.org/10.7203/leeme.52.26865
62. Verma, P., Dumka, A., Bhardwaj, A., Ashok, A., Kestwal, M. C., & Kumar, P. (2021). A Statistical Analysis of Impact of COVID19 on the Global Economy and Stock Index Returns. SN Computer Science, 2(1), 27. https://doi.org/10.1007/s42979-020-00410-w
63. Wang, Z. (2023). Rural Chinese Older Adults Use of Social Media as a Learning Tool: Opportunities and Obstacles to Learning University of Alberta]. University of Alberta. https://doi.org/10.7939/r3-pyvsrq60
64. Woods, P. J. (2024). Conceptualizing Anti-Racist Pedagogies Within Experimental Music's Community of Practice. Adult Education Quarterly, 74(1), 3-22. https://doi.org/10.1177/07417136231198218
65. Yang, H., Chen, H., Pan, T., Lin, Y., Zhang, Y., & Chen, H. (2022). Studies on the digital inclusion among older adults and the quality of life—a Nanjing example in China. Frontiers in Public Health, 10, 811959.
66. Yaroslav, S., Ellina, P., Svitlana, K., & Iurii, S. (2023). Social, Psychological, Professional and Academic Features of the Use of Social Media in the Activities of Higher Education Institutions. International Journal of Media and Information Literacy, 8(1), 228-239.
67. Zhou, Y. (2023). Web-based music learning environment. Interactive Learning Environments.
68. https://doi.org/10.1080/10494820.2023.2185640