



Determining the Behavioral Intention Scales in Lifelong Music Learning Using PLS-SEM Approach

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ARTICLE INFO

Article History:

Received: 05 October 2023

Received in Revised Form: 04 November 2023

Accepted: 24 November 2023

DOI: 10.14689/ejer.2023.108.016

Keywords

PLS-SEM, Behavior Intention, Lifelong Music Learning, Reliability, Validity, Scales.

ABSTRACT

Purpose: it is important to understand students' behavioral intention in lifelong music learning and antecedents that influence intent as it is the basis for promoting students' participation in lifelong music learning. This pilot study aimed to test the validity and reliability of adapted scales, which was prepared for measuring the interrelationship between past behavior, high-demanding parenting styles, attitude, subject norm, perceived behavior control, and behavioral intention in lifelong music learning, as well as in the Chinese context. **Method:**

Participants (n=97) were asked to complete the scale and validate the scale multidimensionally using a second-generation measure, the Partial Least Square-Structural Equation Modelling (PLS-SEM) methodology. The reliability requirements were ascertained using outer loading, composite reliability, and Cronbach's Alpha. The convergent validity of the instrument was evaluated via the use of the average variance extracted, and the discriminant validity was verified through the use of cross-loading, the Fornell-Larcker criteria, and the Heterotrait-Monotrait criterion. **Findings:** After removing six indications, the research outcomes showed that all instruments were valid and reliable and may be utilized in future research. **Implications for Research and Practice:** The scale of this study can be used to obtain first-hand data on the source of lifelong music learning intention and behavior intention in lifelong music learning among Chinese university students. In future, through further data analysis, it can also be used to assess the importance of each path in the hypothetical model, contributing to the development of theories and models.

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Introduction

China has implemented a comprehensive reform of formal education and music education since 1999, which has become an integral component of its formal education system (State Council of China, 1999). China's latest education strategy emphasizes art education (Ministry of Education of the People's Republic of China, 2022). Simultaneously, education policy was prioritized by the 20th National People's Congress of the Communist Party of China (CPC) in 2022 which emphasized upon the establishment of a learning society in which all members engage in lifelong learning (The Central People's Government of the People's Republic of China, 2022).

There has been a longstanding assumption that fostering lifelong music learning is a substantial objective of music education (Bowles et al., 2014; Jones & Langston, 2018; Myers, 2007). Nevertheless, despite the emphasis of governmental policies and the agreement among music educators regarding the importance of music education in fostering continuing musical engagement, prior studies indicate that involvement in school music programs seldom results in lifelong musical participation (Green & Hale, 2011; Myers, 2007, 2008; Pitts & Robinson, 2016). Scholars have recently begun investigating the reasons for continued and discontinued musical engagement (Elpus, 2018; Ilari, 2018; Krause et al., 2020; Krause et al., 2021; Pitts, 2017). Although different studies have different focuses, the accumulated information is similar, e.g., family environment, teachers, past music experiences, and personal emotional state are thought to be the reasons for continuing or stopping music learning. However, few studies have considered how best to promote lifelong music learning intentions. In addition, a particular gap in the existing literature is the lack of effective research instruments to assess lifelong music learning intentions in the Chinese context. Many previous studies have been measured and analyzed using first-generation multivariate analysis, often ignoring measurement errors and less precise methods (Hair et al., 2017).

There is currently a lack of literature involving the validation of research instruments using second-generation data analysis (i.e., SEM), so it is critical to examine the reliability and validity of research instruments before assessing the interrelationships between the structures of lifelong music learning intentions. This study is the first to evaluate the validity and reliability of Chinese university students' lifelong music learning intention research instruments using the Partial Least Squares Structural Equation Modelling (PLS-SEM) approach. In this context, it is interesting to note that there is a limited number of existing studies on lifelong engagement, which focus on older adults after retirement, people with physical or mental challenges, or throughout adulthood (Krause et al., 2021; Shansky, 2010). Graduating from high school and entering university are periods with a high dropout rate in music learning (Lamont, 2011), so this survey selected Chinese university students as a sample.

Literature Review and Theoretical Framework

Lifelong learning intention is defined as the learner's intention to continue learning (Thongmak, 2021). Understanding human behavioral intentions is mainly guided by the theory of planned behavior (Ajzen, 1991). According to Ajzen (1991), a person's attitude, perceived behavior control, and the subject norm have the most significant and direct impact on their behavior intention. Past studies have found that students' attitudes towards music learning are considered essential (Stavrou & Papageorgi, 2021), and many

participants stop learning music because of their negative attitudes towards music learning, such as feeling that music learning is a waste of time and useless (Krause et al., 2020). Subjective norm refers to the influences of those significant to a person and affect decision-making (Yoo, 2020). Parents, teachers, and peers are considered to be essential factors influencing participation in music learning (Pendergast, 2020). Yoo (2021) demonstrated that when students perceive teachers to exhibit a high level of interpersonal engagement, their relevance is satisfied, resulting in a greater willingness to continue engaging with music. In the context of this study, perceived behavioral control is thought to be related to a person's perception of how easy it is to persist in music learning. Previous research has shown that students may have given up on music learning because they believe they lack musical ability (Evans et al., 2013; Ruth & Müllensiefen, 2021).

Beyond that, past behavior has received considerable emphasis as a predictor of behavioral intention and present behavior (Kidwell & Jewell, 2008). Several authors have demonstrated the effect of individual past experiences on their present behavior (Bamberg et al., 2003; Brown et al., 2020; Raut, 2020; St Quinton, 2022). In music learning, previous learning experiences have taught students that playing an instrument requires excellent effort, which can lead to a loss of interest in continuing to study music (Gouzouasis et al., 2008). Conversely, some will relearn music decades later to compensate for disappointing childhood music lessons (Pitts, 2017).

Parental behavior is one of the most influential factors in adolescents' externalizing and internalizing behaviors (Hayek et al., 2022; Marcone et al., 2020; Masud et al., 2019; Sangawi et al., 2018). Parenting styles predicted some specific behavioral intentions (Bates et al., 2023; Hayek et al., 2022; Jiang et al., 2017; Sharaf et al., 2016). It is grounded in parenting style theory (Baumrind, 1991; Maccoby & Martin, 1983). One of the main areas of study in music life history has been the influence of the home environment on musical people. Research has shown that parents impact children's musical goals and practices (Davidson & Borthwick, 2002; McPherson, 2009; O'Neill, 2002; Pitts, 2009). Based on Pitts (2009), it was found that parents provided financial and moral support for their children's instrumental tuition and practice through their musical enjoyment and participation. Specific parental behaviors reflect the parents' expectations and objectives for their children, fostering self-confidence and decision-making control (McPherson, 2009). However, Davidson et al. (1996) studied 257 young students and observed that having a highly accomplished musician parent might be a risk or a role model based on the parent's behavior. Children's musical development might be adversely affected by parents' excessive expectations.

Based on a literature review, a theoretical framework of this study was designed adopting the theory of planned behavior (Ajzen, 1991) and parenting style (Baumrind, 1991), which provided the exogenous variables as past behavior, high-demanding parenting styles (authoritative and authoritarian), the mediating variables as attitude, subjective norm, and perceived behavior control, and the endogenous variable as behavior intention in lifelong music learning.

Methodology

Research Design

This study adopted a quantitative research design with a cross-sectional survey approach

and used PLS-SEM, the second-generation data analysis approach. In current research, convergence validity, discriminant validity, indicator reliability, and internal consistency reliability were used to demonstrate the validity and reliability of the research instruments.

Research Sample

The sample in this study was randomly selected based on non-probability sampling techniques from ten government-funded universities in Fujian Province, China. This investigation was conducted with university students from Fujian Normal University, Fuzhou University, and Fujian Agriculture and Forestry University in mind. The selection of these three universities was based on the fact that they accounted for 52 percent of the total number of students. A total of 97 sample respondents were selected randomly for pilot research. Regarding the pilot test sample size, [Hair et al. \(2017\)](#) define the minimum sample size as "10 times the maximum number of arrowheads pointing at a latent variable anywhere in the PLS path model." Since the maximum number of paths for a particular potential structure in this study was 6, the minimum sample size of 60 was kept. To avoid missing values, suspicious response patterns, and outliers affecting the study measurements, the researchers finally selected a sample size of 97 to be sufficient.

Research Instruments

Several scales were adapted, modified, and translated into Chinese to evaluate the source of behavior intention in lifelong music learning and lifelong music learning intention. For instance, [Raut \(2020\)](#) offered the unidimensional Past Behaviour Scale, which analyzed prior conduct. Five items were taken from this scale as it was highly reliable and valid ([Raut, 2020](#)). The high-demanding parenting styles instrument used in this research was adapted from the Parental Authority Questionnaire (PAQ), initially developed for parenting style and theoretically based on Baumrind's parenting style theory ([Buri, 1991](#)). Due to the flexibility of this scale, PAQ instruments are widely applied to other domains by researchers ([Pinquart & Kauser, 2018](#); [Seroussi & Yaffe, 2020](#); [Vollmer & Mobley, 2013](#)). The scale consists of 30 items measuring the three dimensions of 'Permissive,' 'Authoritative,' and 'Authoritative.' Since this study only considered the high-demand parenting styles, the researcher adopted 20 items used to measure 'authoritative' and 'authoritarian' parenting style tasks. According to [Buri \(1991\)](#), the test-retest reliability for the high-demand parenting styles instrument has been between 0.81 and 0.92, and Cronbach's Alpha values range from 0.82 to 0.87.

The planned behavior factors and behavior intention in the lifelong music learning scale were developed by [Bamberg et al. \(2003\)](#), [Conner et al. \(2002\)](#), and [Sieverding et al. \(2023\)](#) to measure university students' attitudes toward lifelong music learning, subjective norms, perceived behavior control, and behavior intention. There are 25 items on the final edition of this scale. The fact that this scale has been tested in a variety of contexts, including e-learning, learning about healthy eating, and education for sustainable development ([Ahmadi et al., 2017](#); [De Leeuw et al., 2014](#); [Mokhtar et al., 2023](#)), it provided strong evidence that it was adaptable and applicable to any field of study.

Consequently, the primary question of this research was to determine the validity and reliability of the scales for the source and behavior intention in lifelong music learning. All the original scales were translated into Mandarin Chinese and eventually adapted and

integrated into a single scale. Using the Likert type measuring techniques, this customized scale was transformed into an 11-point semantic difference scale, ranging from "strongly disagree" (score 1) to "strongly agree" (score 11). The codes for this scale are shown in Table 1.

Table 1

Variable and Code Used in this Scale

Variable	Code
Past Behavior	PB
High-demanding Parenting	
Style	HDPS:
Dimension:	Authoritative
Authoritative	Authoritarian
Authoritarian	
Planned Behavior Factors	
Dimension:	
Attitude	ATT
Subject Norm	SN
Perceived Behavior Control	PBC
Behavior Intention in Lifelong Music Learning	BIILML

Data Analysis

Before PLS-SEM analysis, the data collected was screened to ensure error-free from missing values, suspicious response patterns, and outliers. All reviews and evaluation of the results of statistical analysis were based on the relationships between items in the measurement model. Each instrument item's convergent validity, discriminant validity, and internal consistency reliability were also evaluated. The composite reliability (CR) and Cronbach's Alpha coefficient assessed each subscale's internal consistency. Average Variance Extracted (AVE) analysis confirmed the instrument's convergent validity. Each instrument item's discriminant validity was assessed using the Heterotrait-Monotrait ratio (HTMT), cross-loadings, and Fornell-Larker criteria. Table 2 lists the scale's validity and reliability acceptance requirements.

Table 2

Acceptance Criteria for Reliability and Validity in PLS-SEM Reflective Measurement Model Evaluations

Categories	Indexes	Assumptions	References
Internal Consistency Reliability	Composite Reliability	CR > 0.7	Hair et al. (2017)
	Cronbach's Alpha	CA > 0.7	Hair et al. (2017)
Indicator Reliability	Outer Loading	Outer Loading > 0.7 (suggested) 0.4 ≤ Outer Loading < 0.7 (acceptable with certain condition) Outer Loading < 0.4 (should be eliminated)	Byrne (2013); Hair et al. (2017)
Convergent Validity	AVE	AVE > 0.50	Hair et al. (2017)
Discriminant Validity	HTMT criterion	HTMT < 0.85 (stringent criterion) HTMT < 0.9 (conservative criterion)	Gold et al. (2001); Henseler et al. (2015); Shneif and Kline (2015)

*Internal Consistency Reliability, Indicator Reliability, and Convergent Validity***Table 3**

Result of Internal Consistency Reliability Analysis Using Outer Loading, Composite Reliability, Cronbach's Alpha, and Average Variance Extracted criterion (Before Adjustment)

Construct Code	Indicator	Outer Loading	CR	Cronbach's Alpha	AVE
ATT	ATT01	0.889	0.891	0.881	0.523
	ATT02	0.879			
	ATT03	0.878			
	ATT04	0.875			
	ATT05	0.593			
	ATT06	0.555			
	ATT07	0.482			
	ATT08	0.444			
HDPS	Authoritarian01	0.869	0.980	0.977	0.829
	Authoritarian02	0.914			
	Authoritarian03	0.927			
	Authoritarian04	0.935			
	Authoritarian05	0.897			
	Authoritarian06	0.944			
	Authoritarian07	0.941			
	Authoritarian08	0.857			
	Authoritarian09	0.892			
	Authoritarian10	0.925			
HDPS	Authoritative01	0.793	0.974	0.970	0.792
	Authoritative02	0.899			
	Authoritative03	0.87			
	Authoritative04	0.938			
	Authoritative05	0.913			
	Authoritative06	0.787			
	Authoritative07	0.923			
	Authoritative08	0.942			
	Authoritative09	0.908			
	Authoritative10	0.914			
BIILML	BIILML01	0.952	0.979	0.973	0.904
	BIILML02	0.947			
	BIILML03	0.949			
	BIILML04	0.954			
	BIILML05	0.95			
PB	PB01	0.842	0.891	0.842	0.641
	PB02	0.937			
	PB03	0.904			
	PB04	0.291			
	PB05	0.846			
PBC	PBC01	0.878	0.924	0.899	0.672
	PBC02	0.885			
	PBC03	0.795			
	PBC04	0.825			
	PBC05	0.581			
	PBC06	0.911			
SN	SN01	0.877	0.962	0.953	0.809
	SN02	0.918			
	SN03	0.892			
	SN04	0.91			
	SN05	0.911			
	SN06	0.89			

Note: ATT-Attitude; HDPS-High Demanding Parenting Style; BIILML-Behavioral Intention in Lifelong Music Learning; PB- Past Behavior; PBC-Perceived Behavior Control; SN- Subject Norm

The values given for each indicator prior to the change are shown in Table 3. First, the outer loading value was used to assess the indicator's dependability. Except for PB04, all of the indicators in Table 3 show exterior outer loading values of more than 0.4. Table 3 also shows that all seven conceptions have CR values more significant than the minimal requirement (>0.70), which are 0.891 (ATT), 0.980 (Authoritarian), 0.974 (Authoritative), 0.979 (BIILML), 0.891 (PB), 0.924 (PBC), and 0.962 (SN).

Table 4

Result of Internal Consistency Reliability Analysis Using Outer Loading, Composite Reliability, Cronbach's Alpha, and Average Variance Extracted Criterion (After Adjustment)

Construct Code	Indicator	Outer Loading	CR	Cronbach's Alpha	AVE
ATT	ATT01	0.891	0.891	0.881	0.523
	ATT02	0.881			
	ATT03	0.880			
	ATT04	0.876			
	ATT05	0.589			
	ATT06	0.550			
	ATT07	0.477			
	ATT08	0.439			
HDPS	Authoritarian01	0.869	0.980	0.977	0.829
	Authoritarian02	0.914			
	Authoritarian03	0.927			
	Authoritarian04	0.935			
	Authoritarian05	0.897			
	Authoritarian06	0.944			
	Authoritarian07	0.941			
	Authoritarian08	0.857			
	Authoritarian09	0.892			
	Authoritarian10	0.925			
HDPS	Authoritative01	0.793	0.974	0.970	0.792
	Authoritative02	0.899			
	Authoritative03	0.870			
	Authoritative04	0.938			
	Authoritative05	0.913			
	Authoritative06	0.787			
	Authoritative07	0.923			
	Authoritative08	0.942			
	Authoritative09	0.908			
	Authoritative10	0.914			
BIILML	BIILML01	0.952	0.979	0.973	0.904
	BIILML02	0.947			
	BIILML03	0.949			
	BIILML04	0.954			
	BIILML05	0.950			
PB	PB01	0.842	0.934	0.906	0.781
	PB02	0.941			
	PB03	0.907			
	PB05	0.842			
	PBC01	0.878			
PBC	PBC02	0.885	0.924	0.899	0.672
	PBC03	0.795			
	PBC04	0.826			
	PBC05	0.580			
	PBC06	0.911			
	SN01	0.877			
SN	SN02	0.918	0.962	0.953	0.809
	SN03	0.892			
	SN04	0.910			
	SN05	0.911			
	SN06	0.890			

Note: ATT-Attitude; HDPS-High Demanding Parenting Style; BIILML-Behavioral Intention In Lifelong Music Learning; PB- Past Behavior; PBC-Perceived Behavior Control; SN- Subject Norm

All of the constructions' CR values are at a good level. Cronbach's Alpha (CA) was an additional measure. According to Table 3, the individual Cronbach's Alpha values are 0.881 for ATT, 0.977 for Authoritarian, 0.970 for Authoritative, 0.973 for BIILML, 0.842 for PB, 0.899 for PBC, and 0.953 for SN. Every indicator exceeds the 0.7 threshold (Hair et al., 2017). The study instruments are dependable survey instruments that can assess complicated emotional domains for all the components, as shown by the CR and CA values. Convergent validity was assessed using AVE values of ATT (0.581), Authoritarian (0.829), Authoritative (0.793), BIILML (0.909), PB (0.781), PBC (0.771), and SN (0.819). The instruments employed to measure the seven reflective components have shown excellent levels of convergent validity, as Table 3 shows that they have all met the minimal threshold value of .50.

After PB04 was eliminated, the model was reanalyzed to determine the outer loading, CR, CA, and AVE values following to the realignment. Table 4 displays the convergent validity and reliability of the newly developed construct. After adjustment, the outer loading, CR, CA, and AVE values for each construct and indicator attained a level that was regarded as acceptable and adequate. Therefore, in order to evaluate the convergent validity and reliability of the scale, a single item – the PB04 indication – was eliminated.

Discriminant Validity

The HTMT criteria, Cross-loading values, and Fornell-Larker criterion were used to evaluate discriminant validity. Table 5 displays the findings of the Fornell-Larcker criteria assessment for the reflective construct. The results demonstrated that each construct's highest value, or matching correlation value, is consistently more significant than values on the left and below. For instance, authoritative variable shows a square root of AVE of 0.890, which is more than the values on the left (0.566 and 0.626), BIILML (0.564), PB (0.618), PBC (0.545), and SN (0.727). This suggests that the discriminant validity is accepted.

Table 5

Result of Discriminant Validity Analysis Using Fornell-Larcker Criterion (Before Adjustment)

	ATT	Authoritarian	Authoritative	BIILML	PB	PBC	SN
ATT	0.723						
Authoritarian	0.436	0.911					
Authoritative	0.626	0.566	0.890				
BIILML	0.648	0.423	0.578	0.951			
PB	0.684	0.467	0.618	0.625	0.884		
PBC	0.812	0.408	0.545	0.840	0.702	0.820	
SN	0.716	0.487	0.727	0.885	0.683	0.807	0.900

It is evident in Table 5 that the values of the highlighted sections do not meet the criteria. According to Henseler et al. (2015), all values in the table should be kept compliant by removing items with high cross-item correlation from the cross-loading. Table 6 shows the result of the Fornell-Larcker Criterion after removing the indicators PBC05, ATT04, and ATT03.

Table 6*Result of Discriminant Validity Analysis Using Fornell-Larcker Criterion (After Adjustment)*

	ATT	Authoritarian	Authoritative	BIILML	PB	PBC	SN
ATT	0.763						
Authoritarian	0.563	0.911					
Authoritative	0.487	0.564	0.890				
BIILML	0.462	0.420	0.578	0.951			
PB	0.558	0.467	0.619	0.625	0.884		
PBC	0.620	0.360	0.540	0.842	0.696	0.867	
SN	0.518	0.485	0.726	0.885	0.683	0.809	0.900

The Fornell-Larcker criteria have long been regarded as the fundamental method for assessing discriminant validity. According to Henseler et al. (2015), it has been criticized for having too little sensitivity. As the primary metric for evaluating a structured model's discriminant validity, the HTMT criterion was first proposed by Henseler et al. (2015). Table 7 displays the HTMT criterion findings.

Table 7*Results of Discriminant Validity Analysis Using HTMT Criterion (Before Adjustment)*

	ATT	Authoritarian	Authoritative	BIILML	PB	PBC	SN
ATT							
Authoritarian	0.626						
Authoritative	0.542	0.582					
BIILML	0.521	0.427	0.592				
PB	0.649	0.500	0.661	0.663			
PBC	0.714	0.359	0.555	0.876	0.743		
SN	0.593	0.499	0.752	0.918	0.730	0.847	

According to Gold et al. (2001), the inter-construct correlations of BIILML and SN exceed the threshold of 0.90. Henseler et al. (2015) proposed a way to decrease heterotrait-hetero method correlations by excluding an item with substantial cross-item correlations from cross-loading. After removing the indicator (SN04, BIILML01, and SN02), all structures conformed to the 0.9 standard (Gold et al., 2001) (see Table 8) (SN04, BIILML01, and SN02). The assessment conducted in this pilot research, using the HTMT criteria, revealed that the scale used in this study possesses strong discriminant validity.

Table 8*Results of Discriminant Validity Analysis Using HTMT Criterion (After Adjustment)*

	ATT	Authoritarian	Authoritative	BIILML	PB	PBC	SN
ATT							
Authoritarian	0.626						
Authoritative	0.542	0.582					
BIILML	0.517	0.412	0.580				
PB	0.649	0.500	0.661	0.664			
PBC	0.714	0.359	0.555	0.875	0.743		
SN	0.574	0.490	0.773	0.895	0.714	0.827	

Table 9

Cross Loadings for all Constructs

	ATT	Authoritarian	Authoritative	BIILML	PB	PBC	SN
ATT01	0.871	0.234	0.582	0.574	0.609	0.715	0.637
ATT02	0.857	0.175	0.542	0.606	0.598	0.758	0.633
ATT03	0.833	0.249	0.567	0.643	0.627	0.752	0.704
ATT05	0.660	0.522	0.241	0.202	0.322	0.332	0.201
ATT06	0.637	0.569	0.214	0.167	0.286	0.262	0.197
ATT07	0.570	0.586	0.181	0.109	0.277	0.243	0.138
ATT08	0.529	0.658	0.251	0.161	0.256	0.240	0.175
Authoritarian01	0.455	0.869	0.589	0.404	0.456	0.345	0.490
Authoritarian02	0.445	0.914	0.533	0.370	0.447	0.342	0.459
Authoritarian03	0.429	0.927	0.446	0.328	0.390	0.299	0.378
Authoritarian04	0.453	0.935	0.484	0.336	0.403	0.324	0.402
Authoritarian05	0.400	0.897	0.450	0.276	0.382	0.281	0.355
Authoritarian06	0.428	0.943	0.454	0.369	0.420	0.348	0.404
Authoritarian07	0.397	0.941	0.449	0.306	0.381	0.283	0.347
Authoritarian08	0.404	0.857	0.580	0.395	0.477	0.323	0.485
Authoritarian09	0.406	0.892	0.563	0.498	0.435	0.374	0.506
Authoritarian10	0.419	0.925	0.554	0.366	0.437	0.326	0.416
Authoritative01	0.460	0.631	0.793	0.445	0.594	0.414	0.559
Authoritative02	0.535	0.450	0.899	0.522	0.605	0.505	0.666
Authoritative03	0.466	0.517	0.871	0.424	0.473	0.424	0.593
Authoritative04	0.509	0.438	0.938	0.528	0.567	0.527	0.688
Authoritative05	0.520	0.492	0.913	0.493	0.503	0.475	0.644
Authoritative06	0.531	0.581	0.789	0.407	0.507	0.388	0.591
Authoritative07	0.483	0.548	0.922	0.541	0.583	0.486	0.681
Authoritative08	0.502	0.532	0.942	0.595	0.561	0.518	0.723
Authoritative09	0.588	0.448	0.907	0.514	0.540	0.509	0.657
Authoritative10	0.528	0.447	0.914	0.526	0.571	0.530	0.737
BIILML02	0.557	0.366	0.583	0.942	0.588	0.798	0.838
BIILML03	0.586	0.405	0.563	0.956	0.615	0.805	0.828
BIILML04	0.565	0.368	0.511	0.963	0.584	0.773	0.798
BIILML05	0.514	0.412	0.495	0.954	0.589	0.816	0.768
PB01	0.569	0.399	0.560	0.558	0.842	0.588	0.593
PB02	0.563	0.392	0.577	0.584	0.940	0.660	0.652
PB03	0.591	0.350	0.530	0.576	0.907	0.686	0.575
PB05	0.563	0.534	0.519	0.476	0.842	0.510	0.499
PBC01	0.662	0.488	0.592	0.794	0.697	0.882	0.777
PBC02	0.661	0.389	0.528	0.783	0.696	0.893	0.730
PBC03	0.637	0.126	0.345	0.590	0.447	0.811	0.558
PBC04	0.652	0.243	0.345	0.624	0.495	0.833	0.569
PBC06	0.636	0.244	0.470	0.788	0.620	0.911	0.684
SN01	0.643	0.434	0.765	0.756	0.677	0.748	0.885
SN03	0.606	0.397	0.595	0.774	0.642	0.721	0.895
SN05	0.540	0.414	0.657	0.767	0.521	0.673	0.932
SN06	0.496	0.463	0.644	0.771	0.538	0.662	0.908

Note: ATT-Attitude; BIILML-Behavioral Intention in Lifelong Music Learning; PB- Past Behavior; PBC-Perceived Behavior Control; SN- Subject Norm

Table 9 illustrates each indicator's cross-loadings, reflecting seven distinct latent constructs (ATT, Authoritarian, Authoritative, BIILML, PB, PBC, and SN). All loadings

exceeded cross-loading (e.g., items ATT01, ATT02, ATT03, ATT05, ATT06, ATT07, and ATT08) load highly on its corresponding construct ATT and significantly less on other constructs Authoritarian, Authoritative, BIILML, PB, PBC, and SN), indicating that discriminant validity has been established for all seven constructs. Meanwhile, Figure 1 shows every outer loading of the indicator associated with each of the related latent constructs in the measurement model. In the measurement model, all indicators had outer loading values that were more excellent than the .708 threshold.

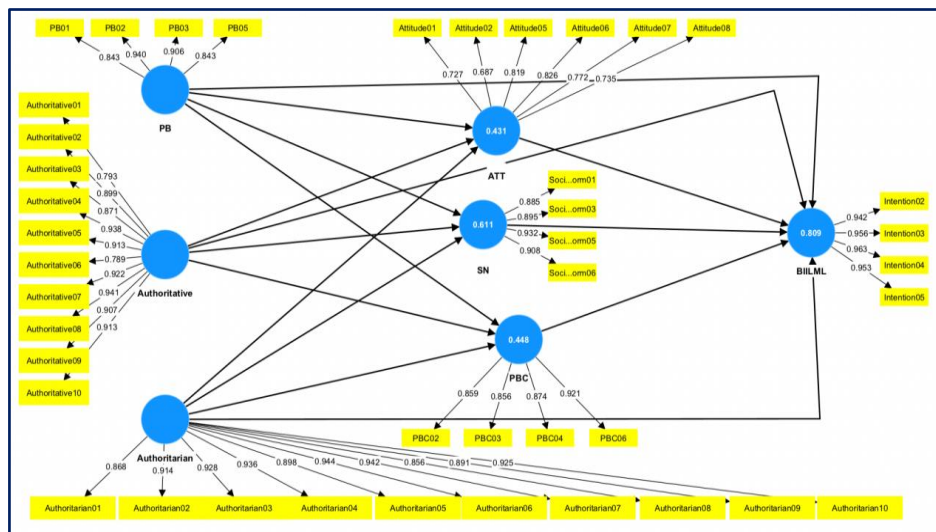


Figure 1: Outer loading and R2 Values for the Measurement Model.

Discussion

The main objective of this research was to verify the validity of the adapted, modified, and translated scales used to assess the sources of lifelong music learning intention and behavior intention in lifelong music learning. This study used a variety of indicators to demonstrate that the scale used in this survey is statistically valid and reliable through second-generation statistical analysis (PLS-SEM). This demonstrates that the psychometric features of the scale may be used for further study to examine the connection of the structural model (see Figure 1).

This study belongs to the category of the few multidimensional spatial validations of research scales. The initial approach varied in its statistical analysis was primarily verified through the utilization of Cronbach’s Alpha values in SPSS software (Bamberg et al., 2003; Buri, 1991; Conner et al., 2002; Raut, 2020; Sieverding et al., 2023). Nonetheless, the present study employed a different measuring scale than previous studies, since the researchers created the semantic differential scale to investigate additional information about this construct. This indicates that this scale may be used in a range of measurement scales, depending on the study context.

The results show that PB, APS, ATT, SN, PBC, and BIILML scales are reliable and valid tools in measuring past behavior, authoritative parenting style, attitude, subjective norm, perceived behavioral control, and behavioral intention in lifelong music learning,

respectively, among university students in China. The instruments are reliable and valid to be used in future research.

Conclusion

This study made evident that a relationship scale can play an important role in practice if it helps to understand the current lifelong music learning intention among Chinese university students and to discover the relationship between students' music learning intention and their past music learning experiences and highly demanding parenting styles that will enable teachers, parents, and students to make better music learning plans. The translated and adapted scale designed for this study showed good reliability and validity, and it would prove to be valuable tool to measure the lifelong music learning intention of Chinese university students. Moreover, Semantic Difference Scale over the Likert Scale was used in this study, it may demonstrate the consistency of the psychometric features of several measuring scales. Last, but not the least, because of its use in cross-cultural validity, this scale may be utilized in a wide range of settings and circumstances.

This scale shall be especially suited for research samples, namely Chinese university students, who share characteristics with the study community. The main disadvantage of this study was the small sample size and restricted location. Although the study's findings are representative of the population, they cannot be applied to the whole population. On the other hand, future studies could generalize the scale to a larger sample in a different context. In terms of policy, the scale adapted for this study can be used to obtain first-hand data on the source of lifelong music learning intention and behavior intention in lifelong music learning among Chinese university students. Through further data analysis in the future, the Chinese government can formulate relevant policies and practices to improve behavior intention in lifelong music learning among Chinese students. Theoretically, the scale in this study can be mainly used to measure the structural model developed based on the theory of planned behavior and the theory of parenting style. This scale can also be used to evaluate the importance of each path in the hypothetical model and contribute to the development of the theory and model.

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