INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT

OPEN ACCESS JOURNAL

Vol 12, Issue 1, (2023) E-ISSN: 2226-6348

Engagement among Malaysian Public University learners of Mandarin as a Foreign Language: A Confirmatory Factor Analysis of Engagement Scale

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To Link this Article: http://dx.doi.org/10.6007/IJARPED/v12-i1/16120 DOI:10.6007/IJARPED/v12-i1/16120

Published Online: 16 January 2023

Abstract

When imagining the ideal classroom, most teachers strive for engagement. To know if learners are engaged in their learning, teachers need to know if the learners get on with their tasks, be attentive in class, complete their assignments and actively participate in class activities. In contrast, learners feel relaxed and energetic and enjoy learning. Numerous theoretical models of engagement suggest that it is important in education and second languages but has limited adoption in foreign language learning, especially Mandarin as a foreign language. This study aims to analyse the psychometric properties of the Mandarin Foreign Language Engagement scale. A random sample of 614 individuals from selected public universities in Malaysia was used for the study. The 14 items of the Mandarin Foreign Language Engagement Scale (MFLES) factor structure was adopted from previous studies and analysed using confirmatory factor analysis. The study found that the MFLES has good psychometric properties.

Keywords: Psychometric Properties, Confirmatory Factor Analysis, Engagement, Mandarin Foreign Language

Introduction

Engagement in daily life requires commitment, involvement, passion, effort, and energy. In education, the foundation of students' engagement refers to the relationship between students' learning and the time and effort they devote to their education. The research on student engagement generally dates back originated Astin's (1985) "Student Involvement Theory" and has been renamed "student engagement theory". According to Astin (1984), student engagement refers to "the amount of physical and psychological energy students devote to the academic experience". (p. 518) In other words, an active student is one who devotes considerable energy to study and actively interacts and communicates with peers and teachers in schools or institutions. (Astin, 1984 cited in Morgan et al., 2017) Astin's theory states that students' physical and psychological engagement not only depends on classroom

practice or content but is also related to individual student behaviour. So, the foundation construct of engagement is thus based on Astin's principle of student engagement.

Harper&Quaye (2014, cited in Ju et al., 2022b) argued that engagement is not just about involvement and participation but also requires feelings of belonging and sense-making as well as activities. Students' engagement is to look at how students are involved in their learning process, their willingness and desire to participate in the academic task, and how they communicate and interact with their teachers and peers in school and in the classroom. Skinner et al (2009) as in Ju et al (2022) defined students' engagement as "the quality of a student's connection or involvement with the endeavour of schooling and hence with people, activities, goals, values, and place that compose it". (p. 494) In the literature review, Fredricks et al (2004) cited in Tarabini (2018) identify three dimensions of students' engagement:

a. Behavioural Engagement

Behavioural engagement refers to students' positive conduct, learning and academic task involvement, and participation in school-related activities. (Fredricks, Filsecker, & Lawson, 2016). According to Archambault, Vandenbossche-Makombo, & Fraser (2017), students' behavioural engagement can predict their academic performance and influence other students' abilities to focus on classroom tasks. Misbehavior (withdrawal and disruptiveness), involvement, and conformity with norms and expectations are all examples of behavioural engagement (Fredricks, Filsecker, & Lawson, 2016). Although positive behaviours are more likely to co-occur in the same individuals, some children may, for example, obey directions while not participating or not paying attention without necessarily being disruptive (Pas et al., 2015).

b. Emotional Engagement

Emotional engagement involves students' feelings of belonging and involvement in school. Students show interest and willingness to participate in the given task and enjoy the learning. Since students' interest and comfort at school is significantly important for engaging in learning activities, emotional engagement can be considered an important component in the overall assessment of student engagement. Pietarinen et al (2014) concluded that students' school-related well-being is regulated by their emotional engagement in teacher-student and peer group relationships.

c. Cognitive Engagement

Cognitive engagement refers to students invested in their learning with the willingness to put extra effort into investing in working on the academic task. Cognitive engagement involves students' thinking skills while acquiring knowledge or completing tasks. (Anthonysamy, Koo, & Hew, 2020). Shara and Then (2008) state that cognitive engagement relates to motivational goals and self-regulation.

The discussion on student engagement in other parts of the world has just begun. Even in the Malaysian context, only a few studies address the phenomenon of student engagement (Teoh & Kee, 2020). Numerous studies (Payne, 2017; Pawlak et al., 2020) have found that learners in high institutions lack engagement and commitment to learning. Others (Avcı & Erguen, 2019) argued that less engaged learners could cause serious problems, such

as dropping out of institutions and academic difficulties. The impact of student engagement on academic performance depends on the engagement component studied (Lee, 2013, p. 178). Studies have found a correlation between behavioural engagement and language proficiency (Kosmas et al., 2018) and language achievement (Dincer et al., 2019; Ju et al., 2022b). Other regions of the world have only recently begun to look at student engagement, and even in Malaysia, few studies have been conducted (Teoh & Kee, 2020).

The engagement has been divided into the emotional, behavioural and cognitive engagement. Previous studies have found that engagement in language learning is associated with emotional, behavioural and cognitive engagement (Ramshe et al., 2019; Derakhshan et al., 2022) The Mandarin foreign language engagement scale(MFLES) was developed by Reeve & Tseng (2011). It is a general instrument primarily aimed at Mandarin learners who learn Mandarin in Chinese characters. It does not consider non-native Mandarin learners learning Mandarin in Hanyu Pinyin (the official romanisation system for Standard Mandarin Chinese). The original MFLS comprises 14 items. The reliability and validity of the MFLES were tested with native speakers in Taiwan. The scale has not been tested on other continents. The aim of this study is, therefore, to investigate the psychometric properties of the Mandarin as a Foreign Language Engagement Scale in selected public universities in Malaysia.

Methodology

Participants

The study used cluster sampling to invite Mandarin foreign language learners from the selected public universities in Malaysia. A minimum sample size of 614 non-native speakers voluntarily participated in the survey. Participants who had a basic knowledge of Mandarin were also excluded from the study (learners who learnt Mandarin in primary schools in Malaysia). Participants were aged between 18 and 26 years, with an average age of 22. The total number of Mandarin courses offered by the universities to the learners was 120 hours, of which 42 hours were face-to-face classes and 78 hours were non-public classes. Therefore, the number of valid data from the participants was used for further statistical analysis.

The participants in the current study were from the Malay L1 background. The first language background of the learners at all the selected universities is unbiased. The Chinese writing system is different from the L1 and L2 writing systems. In this study, learners from different disciplines attended Mandarin classes for two to three hours per week and completed 14 weeks in one semester to partially fulfil the academic degree requirements. The questionnaire was omitted for the final data analysis of those who had not completed it.

Measures

The current study of the Mandarin Foreign Language Engagement Scale was adapted from Reeve & Tseng's (2011) Mandarin Chinese language classroom engagement scale. The scale, developed exclusively for the Mandarin Language, shows behavioural engagement as an indicator of learners' on-task attention, class participation and effort. In other research, behavioural engagement is usually measured by task participation rather than academic engagement or prosocial behaviour. The scale consisted of 14 items to assess the four aspects of learners' engagement in class. Items 1 to 5 and 10 assess learners' behavioural engagement. Items 6 to 9 assess learners' emotional engagement, and items 11 to 14 assess learners' cognitive engagement. For each measure, a 7-point Likert scale was used, ranging

from 7 "strongly disagree" to 6 "disagree", 5 "somewhat disagree", 4 "of course", 3 "somewhat agree", 2 "agree" and 1 "strongly agree". Reeve & Tseng's (2011) Mandarin classroom engagement scale showed high internal reliability (alpha=.82). This scale is similar to other commonly used and reviewed behavioural engagement assessments (Skinner, Kindermann, & Furrer, 2009). The previous study proved that the scale is reliable and valid in predicting learning success. (Derakhshan et al., 2022;).

Statistical Analysis

The reliability of the internal consistency of the three-factor engagement scale was tested using Cronbach's alpha and the corresponding acceptability criterion 0.936 ≥ 0.70. Construct validity was examined using both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Confirmatory factor analysis (CFA) was conducted using Amos 25.0. to assess the goodness of fit of the factor structure. To ensure the completeness of the results, the chi-square value, the degree of freedom and the corresponding P-value were reported. Models with the goodness of fit index GFI=.934. TLI=.955, Normed Fit Index (NFI =.957), Comparative Fit Index CFI (.965) and Root Mean Square Error of Approximation (RMSEA=.078< 0.08), and The value of CMIN/DF was 4.75< 5, it was considered a model good fit.

Discussion and Finding

Two different CFAs were conducted for the Mandarin Foreign Language Engagement Scale(MFLES) to test the underlying structure of the scales. Both measurement models were run using Analysis of Moment Structures (Amos 24.0). The maximum likelihood method was used to assess the overall goodness of fit of the model. This maximum likelihood method evaluates the hypothesis that language learning is a unidimensional construct. This construct consists of three different factors: emotional, behavioural and cognitive. The chi-square and other model fit indices, such as the goodness-of-fit index (GFI), the Tucker-Lewis index (TLI), the normalised fit index, the comparative fit index and the root mean square error of approximation (RMSEA), are used by many practitioners (Lee et al., 2021; Fauzi et al., 2022) to determine the fit of the model.

The first-order analysis for engagement in language learning yielded a chi-square of 284.878, df 60, p=.001. The significance of the p-value indicates poor model fit because the chi-square is sensitive to the large sample size. The researcher turned to the supplementary indices to determine the fit of the model under study. The supplementary indices yielded fit indices that exceeded the recommended critical value of .90. More specifically, the value of GFI is 934, TLI = .955, NFI =.957, CFI = .965 and RMSEA =.078. The value of CMIN/DF is 4.75, indicating that the model was well fitted as the value is well below the suggested maximum value of 5. The absence of aberrant estimates, such as negative variance in the outcome, and the high fit indices support these results.

Based on the multiple indicators of the first-order confirmatory factor analysis (CFA), it can be stated that the model fit and the hypothetical measurement model were acceptable. In addition, the covariance coefficients between the three factors were also high, which partly indicates the unidimensionality of the engagement construct in language learning. As shown in Figure 1, the covariance coefficients are .73, .76 and .87 for emotional, cognitive, behavioural cognitive and emotional and behavioural learning engagement, respectively.

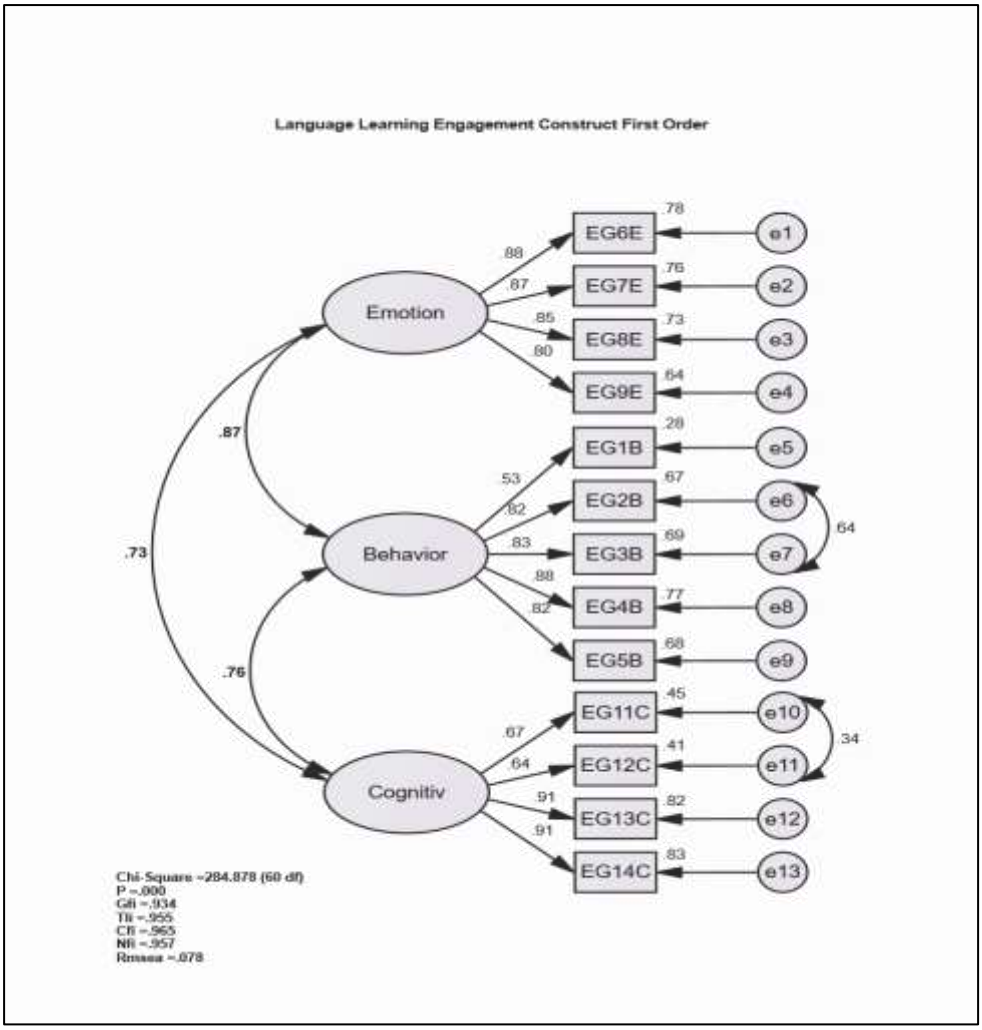

Figure 1. Mandarin Foreign Language Learning Engagement Measurement Model 1st Order

After testing the first-order measurement model, the second-order engagement construct in Mandarin foreign language learning was also analysed and estimated. This model also consisted of three unique factors in the first order, namely emotional, behavioural and cognitive engagement in Mandarin language learning. The researcher also assessed and presented the unstandardised and standardised regression weights, standard errors, critical ratios and squared multiple correlations for engagement in Mandarin foreign language learning to support the indices obtained.

The reliability of the items was also carefully tested. The results showed that the squared multiple correlations indicators. (except for a single item, EG1B) This measurement model was more significant than the recommended value of .50. The result suggests that the underlying dimensions of learning success explain most of the variance in the construct. The result showed that the underlying dimensions explained almost two-thirds of the variance in the items. Although the three items did not reach the recommended value of .50, they were retained in the analysis because they significantly contributed to the content and construct validity factor. These items were also retained because estimating other suitability components, such as construct reliability, variance extracted, and factor loading remained largely appropriate and suitable. The factor loading, which examines the correlation coefficients between the indicators and the common latent factors, also showed a higher

value loading for the emotional, cognitive and behavioural factors for Mandarin foreign language learning engagement. The researcher retained the same items as the first order because of their high quality.

The obtained goodness of fit indices outreached the recommended threshold score of .90. The GFI reached (.942), TLI (.964), NFI (.964), CFI (.972), RMSEA (.070). The value of CMIN/DF was 4.01, indicating that the proposed measurement model in question fits perfectly, as the value is below the recommended maximum of 5. The lack of evidence for deviating estimates, such as a negative error variance in the result and the high goodness-of-fit indices, supported this result. The analysis also showed the correlation coefficients between the observed variables and the common latent factors. In other words, the factor loadings of the items were considerably high, above the .50 value recommended by practitioners. Moreover, the covariance between the factors was .93, .93 and .87 for emotional, behavioural and cognitive engagement in Mandarin foreign language learning, respectively. Many empirical studies have supported these findings (Hiver et al., 2021; Fredricks et al., 2019).

Therefore, based on the current study and previous studies, it can be stated that language engagement is a multifactorial construct that includes emotional (affective), behavioural and cognitive factors (Guo et al., 2022; Javed et al., 2022; Benlahcene, 2021)

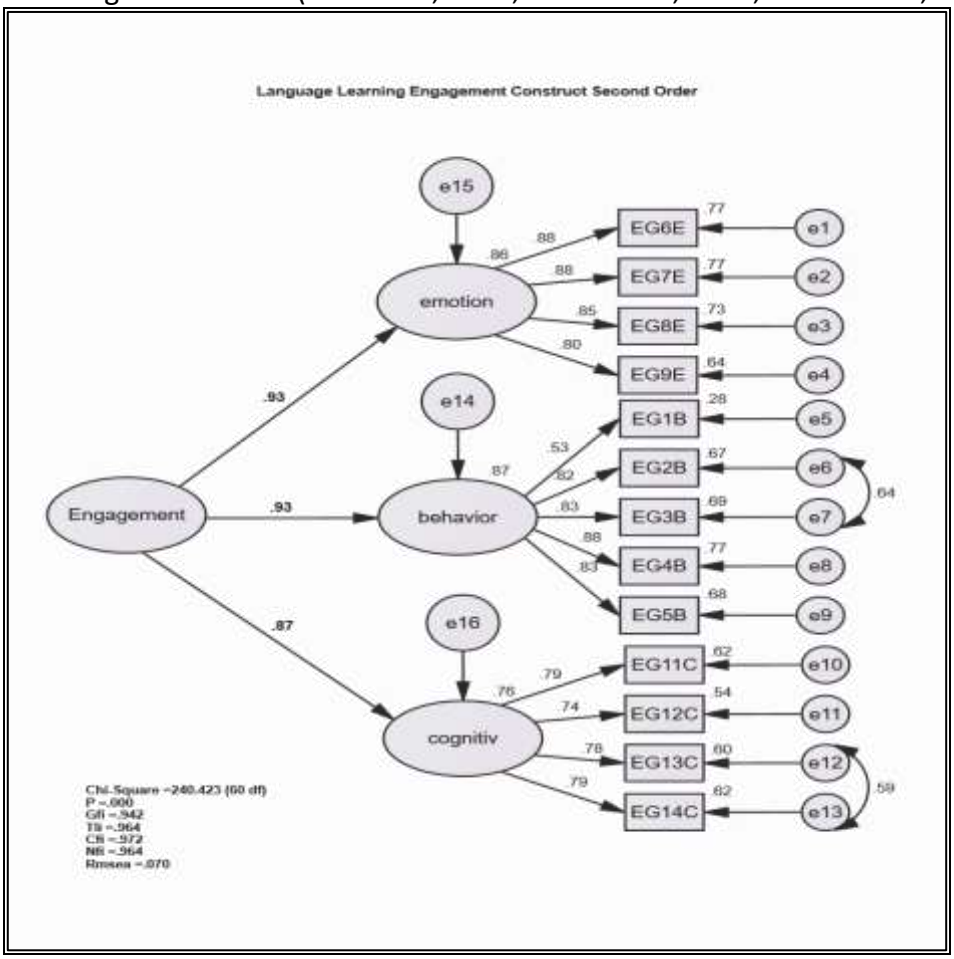

Figure 2. Mandarin Foreign Language Learning Engagement Measurement Model 2nd Order

The confirmatory factor analysis (CFA) results confirm that the model fits perfectly. Comparing the first and second orders indicates that both are statistically fit, although the

second order is slightly better than the first order in terms of fitness indices for GFI, TLI, NFI and CFI. In addition, the reliability of the individual factors was also higher in the second-order analysis than in the first-order analysis.

Conclusion

Engagement is the key to successful foreign language learning, and there is growing interest in how to engage learners in foreign languages in higher education institutions. The primary aim of the current study was to analyse the psychometric properties of Mandarin Foreign Language Engagement. The finding of Mandarin foreign language engagement was consistent with many previous studies (Hiver et al., 2021; Fredricks et al., 2016a). As research on engagement in foreign language learning expands, so do inventories to measure it.

This study contributes to the existing literature by establishing three factors of engagement from the perspective of Mandarin foreign language learners in public universities in Malaysia. These three factors from the confirmatory factor analysis confirm university students' engagement in learning Mandarin as a foreign language. To measure university students' engagement in learning Mandarin as a foreign language, universities/institutions could apply these factors in their future studies. In addition, teachers who teach Mandarin as a foreign language can use the instrument to measure their learners' engagement in language learning, as the validity and reliability of the instrument's psychometric properties have been confirmed.

The researcher suggested that even though the MFLES found in this study are psychometrically sound. Still, when looking for an appropriate scale for their research, researchers should be cautious because a scale that is not comprehensive would not be able to capture all the aspects that a researcher is trying to investigate. It would not be able to contribute to the theoretical underpinning. The current study only covered a few selected public universities in Malaysia. Future studies should further analyse whether Mandarin foreign language engagement applies in other samples and countries.

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