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Adaptability and Student Engagement among Iranian EFL Learners: The Mediating Role of Plurilingual and Pluricultural Competence

Zahra Bayat^{1*} 
 Farhad Ghorbandordinejad² 

¹Ph.D. in Applied Linguistics, Department of English Language, Faculty of Literature and Humanities, Hakim Sabzevari University, Sabzevar, Iran

²Professor of Applied Linguistics, Department of English Language Teaching, Baskent University, Ankara, Turkey

ABSTRACT

Despite extensive research on factors influencing student engagement (SE) from a positive psychology perspective, the connection between adaptability and SE has been underexplored. The present study investigates the relationship between learners' adaptability, plurilingual and pluricultural competence (PPC), and SE in second language acquisition, guided by the PERMA model, which posits that well-being consists of Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment (Seligman, 2018). The researchers employed stratified random sampling to collect data from 599 male and female Iranian English as a Foreign Language (EFL) learners. These students then completed questionnaires, including the PPC scale (Galante, 2022), the adaptability scale (Feng et al., 2005), and the SE scale (Lam et al., 2014). Findings have shown that adaptability significantly predicts enhanced PPC, which in turn fosters greater SE. However, analysis of covariate variables revealed that gender and age were not significant predictors of PPC. Grade was a significant predictor of engagement, and language background was a significant predictor of PPC. These results underscore the importance of integrating adaptability training and PPC development into EFL curricula to cultivate culturally responsive learning environments and enhance SE. Further research is needed to determine the moderating roles of demographic variables. This will contribute to a more engaged, adaptable, and globally competent student body, better prepared for success in diverse contexts.

KEYWORDS: Adaptability; Plurilingual and pluricultural competence (PPC); Student engagement (SE); Iranian EFL learners

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CORRESPONDING AUTHOR

E-mail: zahra.bayat@hsu.ac.ir

1. Introduction

The notion of SE is a complex concept that includes behavioral, cognitive, emotional, and social dimensions, highlighting its dynamic and context-dependent nature (Hastie et al., 2022; Reeve and Tseng, 2011). To explain their description, the behavioral dimension of SE involves observable actions such as regular attendance, active participation in class discussions, and timely completion of assignments, which demonstrate a learner's physical involvement in educational activities. The cognitive and emotional components complement this by encompassing mental processes like focused attention and strategic thinking (cognitive), alongside positive feelings towards learning such as enjoyment or interest (emotional). Additionally, the social

dimension emphasizes interactions with peers and teachers through collaboration or feedback exchange, which supports learning by creating an environment that encourages mutual support and shared understanding.

Factors influencing SE include interpersonal relationships, motivation, and institutional practices (Granziera et al., 2024; Kuh, 2009; Xerri et al., 2018; Kahu, 2013). However, defining and measuring SE remains complex due to its variability across different educational contexts (Boulton et al., 2019; Gourlay, 2015; Kahu, 2013). Engagement strategies involve communication, governance, active faculty and teaching assistant interactions, blended learning models, and social support (Bedi, 2023; Chowdhury, 2023; Bryson & Hand, 2007; Wilson, 2020; Baranova et al., 2019; Vayre & Vonthron, 2017; Chiu, 2021). Various factors, including behavioral and psychological aspects, influence engagement levels (Hastie et al., 2022). Monitoring student activity via learning management systems (LMS) and machine learning can enable timely interventions (Ahmadi et al., 2023; Hussain et al., 2018). High engagement is linked to better academic performance and critical thinking skills (Stang & Roll, 2014).

Despite these insights, it is concerning that many students remain disengaged in EFL classes in Iran (Derakhshan & Gao, 2025; Derakhshan et al., 2021; Salimi & Karimabadi, 2020). Understanding the reasons behind varying levels of learner engagement in second language acquisition is crucial for educators. In this regard, Modarresi (2022) found that task-based collaborative activities, such as debating and dictogloss, elevate SE in writing tasks. Debate-based instruction was particularly effective, showing a greater increase in engagement compared to dictogloss. In similar works, Hamedei et al. (2020) revealed that reading engagement plays a mediating role in the relationship between reading emotions and reading comprehension. Additionally, it was found that both reading emotions and engagement are significant predictors of reading comprehension. In this regard, Fathi et al. (2021) found that teachers' individual self-efficacy was a more powerful predictor of work engagement than their collective efficacy. Both factors uniquely contributed to work engagement, with individual self-efficacy having a greater impact. In extensive classes, effective teaching strategies, individual motivation, and influential teacher-student partnerships are essential for sustaining SE (Fang & Hsu, 2017; Martin & Bolliger, 2018).

In addition, adaptability is the ability to effectively adjust to changing circumstances, particularly in education, where it fosters flexibility and open-mindedness among educators and students. This ongoing learning and cultural responsiveness are vital for creating inclusive environments. Adaptability allows individuals to modify their skills and motivations in response to various challenges, serving as a crucial mental resource, especially for students transitioning to high school or employees in dynamic workplaces (Elphinstone et al., 2019; Kodden, 2020; Holliman et al., 2022). It is a predictor of success in contexts requiring continuous learning and development (Kodden, 2020).

It is noteworthy that several components influence adaptability, including personality traits, social support, and psychological flexibility, all of which affect how individuals respond to change. Research indicates that higher levels of adaptability are connected with improved psychological well-being, as individuals are better able to accept negative experiences while pursuing their goals (Kharkhurin et al., 2023; Xerri et al., 2018; Zhang & Liu, 2024). However, excessive adaptability may lead to stress or burnout if individuals struggle to maintain personal values and boundaries. Hence, adaptability is not only critical for personal well-being but also paramount for enhancing cognitive and behavioral engagement in educational settings (Holliman et al., 2022).

Moreover, PPC emphasizes the integration of language skills and cultural understanding, reflecting their interdependence (Galante, 2022). This competence encompasses various language abilities, literacies, and intercultural experiences, enhancing communication and learning. Factors influencing PPC include language repertoire, multicultural experiences, and educational frameworks like FREPA and CEFR (Strasser & Reissner, 2022; Piccardo, 2019). Additionally, comprehension strategies that help individuals understand languages not formally studied are crucial for developing PPC (Santos Alves & Mendes, 2006). It is consequently recommended by recent research that PPC fosters a diverse knowledge base essential for effective interaction in multicultural contexts (Galante, 2025; Oksana & Ruzana, 2021).

In the modern interconnected society, possessing PPC is essential for effective communication and cultural understanding (Galante & dela Cruz, 2024; Martinez, 2025; Strasser & Reissner, 2022). Educational institutions globally recognize the importance of teaching PPC to prepare students for diverse interactions. Proficiency in multiple languages enhances both speaking and comprehension capabilities, leading to richer cultural exchanges within language classes (Eren, 2024). Recognizing the necessity of adaptability for nurturing PPC underscores the need for further exploration of how adaptability facilitates these critical learning processes, which still remain relatively underexplored in current scholarly discourse.

To explain, PPC offers numerous benefits, including improved learning outcomes, social cohesion, and enhanced creativity. By manipulating existing language skills, PPC fosters an ecological approach to language teaching, guiding superior educational achievements (Chen & Hélot, 2018). It also promotes social cohesion by respecting cultural diversity and improving composite social identities within multilingual contexts (Santos Alves & Mendes, 2006). Furthermore, PPC enhances creativity via encouraging flexibility, originality, and fluency in divergent thinking, consequently contributing to a comprehensive educational experience (Kharkhurin et al., 2023).

Considering the recent findings about the role of PPC, especially in connection with adaptability and SE (Galante, 2025; Kharkhurin et al., 2024; Martinez, 2025; Woll & Paquet, 2025; Zaidi et al., 2025), the development of PPC would be essential for navigating today's diverse learning environments, rendering them valuable assets in both educational and social contexts. This study targets to investigate how PPC influences the relationship between adaptability and SE in an EFL context, providing insights for educators and policymakers to formulate effective strategies that bolster students in varied learning environments and ultimately enhance educational outcomes. The rationale behind this study lies in its potential to bridge a gap by exploring how PPC mediates between adaptability and SE, which are crucial factors influencing student success in complex educational settings. By examining this interplay and regarding the prior research (Collie et al., 2017; Galante, 2025; Granziera et al., 2024; Seligman, 2018), this research contributes significantly by offering actionable recommendations for educators to foster a supportive environment that promotes psychological well-being alongside academic achievement, thereby enhancing overall educational effectiveness.

2. Literature review

2.1. Student engagement

In the framework established by Hiver et al. (2024), SE refers to the quantity and quality of learners' active participation in language acquisition tasks. According to Reeve and Tseng (2011), SE includes behavioral, cognitive, emotional, and social dimensions, emphasizing its dynamic and context-dependent nature. Engaged learners demonstrate commitment and active involvement, which are crucial for meaningful learning outcomes. Additionally, SE reflects the level of interest and connection students have with their learning experiences, classes, institutions, and peers (Axelson & Flick, 2010).

Past research has illuminated the role of SE in educational contexts. A study found that self-efficacy fully mediates the relationships between interpersonal relationships (with parents, peers, and teachers) and the four dimensions of SE among high school students in Malaysia. These findings underscore the importance of fostering positive interpersonal relationships to enhance students' self-efficacy (Benlahcene et al., 2024). However, the extent to which these findings are generalizable to other cultural contexts, particularly the other Asian contexts, remains an open question. Additionally, Wang et al. (2023) illustrated that learning adaptability positively predicts English academic engagement among middle school students in China, with foreign language anxiety and English learning self-efficacy serving as sequential mediators in this relationship.

Moreover, precedent studies highlight the importance of positive teacher-student interactions (Li, 2023), mindfulness and resilience (Liu et al., 2022), and nonverbal immediacy with teacher credibility (Derakhshan, 2021) in enhancing SE in foreign language education. From this perspective, Modarresi's study (2025) demonstrated that dictogloss and debating could elevate SE in writing, noting that the debate-based instruction could improve SE in writing more than the dictogloss instruction. Pishghadam et al. (2021) also discovered that teacher stroke, as an example of teacher interpersonal communication behaviors, raises motivation for learning a foreign language.

2.2. Adaptability

There is a large volume of published studies describing the role of adaptability in education (Liu & Wan, 2024; Parsons & Vaughn, 2016; Wu & Yu, 2024; Zhang et al., 2021; Zhang & Liu, 2024). Martin et al. (2013) define adaptability as the ability to make cognitive, behavioral, and emotional adjustments in response to uncertainty and novelty in educational settings. Adaptability helps students adjust to new challenges, promoting positive engagement and improving academic performance by enhancing persistence and reducing disengagement, leading to greater academic success (Collie et al., 2017).

Concerning former research, Wu and Yu (2024) uncovered that personality traits like extroversion, agreeableness, openness, and conscientiousness enhance e-learning engagement, while neuroticism has a negative effect. Enjoyment and adaptability mediate this relationship. Zhang and Liu (2024) developed a self-adaptive platform that highlights learning adaptability through flexibility, individuality, initiative, and reflection to improve student comprehension in intelligent education frameworks.

Furthermore, Liu et al. (2023) confirmed a positive correlation between professional identity and career adaptability among Chinese engineering students, with learning engagement mediating this relationship. Professional interest and satisfaction were key factors in this adaptability. Mohammad Hosseini et al. (2022) discovered that cultural self-confidence and foreign language enjoyment predict SE among Iranian EFL learners, with enjoyment being the stronger predictor.

In the same vein, Zhang et al. (2021) noted that adaptability during the COVID-19 pandemic enhances SE by promoting positive academic emotions and reducing negative ones. Sabbaghi et al. (2020) identified correlations between academic optimism, competence, and engagement, while negative emotions inversely affected engagement. Adaptability also mitigates failure dynamics by improving control and reducing anxiety among students (Martin et al., 2015).

2.3. Plurilingual and pluricultural competence (PPC)

The concept of PPC has gained significant attention in recent years due to its importance in fostering effective communication across diverse linguistic and cultural environments (Eren, 2024; Galante, 2025; Kharkhurin et al., 2024; Martinez, 2025; Trenchs-Parera & Pastena, 2024; Zaidi et al., 2025). In this regard, Galante (2025) has defined PPC as an individual's ability to navigate and utilize multiple languages and cultural contexts effectively, bolstering a nuanced understanding of linguistic diversity and intercultural communication. In the realm of foreign language education, PPC is often undervalued in foreign language education, limiting recognition of its cognitive benefits and the ecological approach to diverse linguistic repertoires (Chen & Hélot, 2018; Galante, 2022). This raises concerns about the potential for educational systems to inadvertently perpetuate linguistic and cultural biases, hindering the development of truly global citizens.

Recent studies like Nguyen (2025) and Duarte and Günther-van der Meij (2025) and have elucidated critical components for designing effective multilingual and multicultural events for primary school students. Although university students acknowledged the potential of such events to improve children's plurilingualism and global competence, they often maintained static views of culture, pointing to the necessity for a dynamic understanding and careful consideration of cultural representations to avoid stereotypes (Kantelinen et al., 2024). This highlights the challenge of promoting PPC in a way that avoids stereotyping cultures, emphasizing the need for critical reflection and intercultural dialogue.

In another scientific inquiry, Trenchs-Parera and Pastena (2024) found that intercultural friendships and familial plurilingualism foster transcultural competence in multilingual university settings, promoting a complex identity. Kharkhurin et al. (2024) also discovered that neuroticism enhances the link between plurilingualism and creativity, while extraversion boosts intercultural competence and divergent thinking skills.

Eren (2024) explored that plurilingual awareness predicts intercultural communicative competence, with practices like code-switching enhancing multilingual learning. Galante and dela Cruz (2024) additionally identified a gap in PPC scores among Montreal participants, highlighting the need for minority language recognition. Moreover, Piccardo (2019) and Muñoz-Basols (2019) advocated for dynamic approaches to plurilingualism and multilingual education.

The theoretical framework of this article is grounded in positive psychology (Seligman, 2002), particularly the PERMA model developed by Martin Seligman, which outlines five essential elements of well-being: Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment (Seligman, 2018). Our model is particularly relevant to the proposed mediation model as it emphasizes how adaptability can enhance SE through the development of PPC. By fostering adaptability, students are likely to experience increased positive emotions and engagement in learning contexts, aligning with Seligman's assertion that these elements are crucial for achieving a flourishing life (Seligman, 2018). Moreover, the role of PPC in augmenting engagement reflects the idea that meaningful relationships and accomplishments in educational settings contribute to overall well-being (Forgeard et al., 2011). Thus, the integration of adaptability and PPC within this framework not only supports SE but also promotes effective second language acquisition outcomes, highlighting the importance of a holistic approach to education that nurtures psychological well-being alongside academic success.

By addressing the following research questions, this study aims to contribute to a more focused understanding of the complex interplay between adaptability, PPC, and SE, and to inform the development of interventions that promote student success in diverse educational settings.

1. What are the relationships between adaptability, plurilingual and pluricultural competence (PPC), and student engagement (SE)?
2. How does adaptability predict PPC?
3. How does plurilingual and pluricultural competences (PPC) predict student engagement (SE)?
4. How does adaptability predict student engagement (SE), either directly or through the mediation of plurilingual and pluricultural competence (PPC)?

Furthermore, we sought to investigate the influence of covariate factors, specifically gender, age, language background, and grade level, within the context of the proposed mediation model.

In the hypothesized mediation model presented in Figure 1, we propose that adaptability significantly influences SE through the mediating role of PPC. Specifically, we suggest that students who exhibit higher levels of adaptability are more likely to develop robust PPC, which in turn enhances their engagement in language learning contexts. This model accounts for additional demographic variables, including gender, age, language background, and grade level, which may also impact SE. By elucidating these relationships, the model underscores the importance of fostering adaptability and PPC in educational settings to promote greater SE, thereby contributing to more effective second language acquisition outcomes.

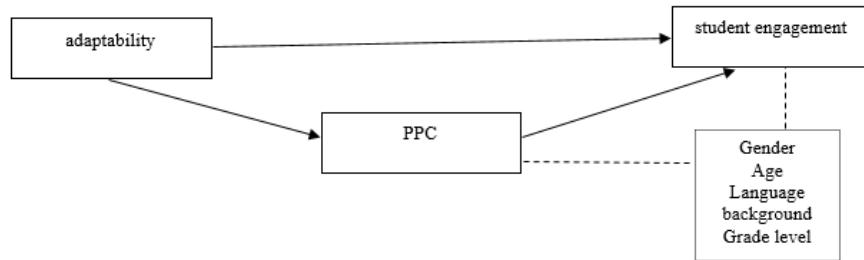


Figure 1. The proposed model

3. Methodology

3.1. Participants

In the existing analysis, data were primarily collected from five provinces in Iran: Tehran, Razavi Khorasan, Ardabil, Golestan, and Khuzestan. Utilizing a stratified random sampling method, the researchers gathered data from a total of 599 Iranian EFL learners, specifically both male and female participants. The demographic characteristics of the EFL learners are presented in Table 1.

Table 1. Student participant profile

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	204	34.5%
	Female	395	65.5%
Age	12 years	35	5.8%
	13 years	116	19.4%
	14 years	117	19.5%
	15 years	104	17.4%
	16 years	110	18.4%
	17 years	20	3.3%
	18 years	97	16.2%
Language background	Persian	349	58.2%
	Turkish	250	41.8%
Grade	Grade7	141	23.5%
	Grade8	102	17.0%
	Grade9	84	14.0%
	Grade10	127	21.2%
	Grade11	80	13.3%
	Grade12	65	10.8%
Total		599	100%

As table 1 shows, the data offered a diverse demographic representation, including a significant number of females and a wide age range, which empowers the potential for nuanced insights into gender-specific and age-related trends. Likewise, the inclusion of participants from different language backgrounds and educational levels provided a rich context for cultural and educational comparisons, strengthening the overall research findings.

3.2. Instruments

Data were collected using online questionnaires (Google Forms) with three standardized instruments. Researchers collaborated with teachers to distribute links via communication platforms, enhancing sample size and efficiency across Iran's provinces. The questionnaires assessed adaptability, PPC, and SE using established scales starting with demographic information.

3.2.1. Student engagement (SE) scale

For assessing the engagement of EFL learners, the SE scale developed by Lam et al. (2014) was utilized in this study. This instrument comprises 20 items rated on a 4-point scale, ranging from 0 (strongly disagree) to 4 (strongly agree), and includes four key components: cognitive engagement, affective engagement, behavioral engagement, and agentic engagement. The SE scale is recognized for its reliability and validity in measuring EFL learners' engagement, demonstrating strong internal consistency ($\alpha > 0.7$) (Lam et al., 2014). In the current project, the Cronbach's alpha was reported as 0.884, with construct validity discussed in the results section.

3.2.2. Adaptability scale

To evaluate the learning adaptability of EFL learners, the adaptability scale developed by Feng et al. (2005) was employed. This scale consists of 29 items rated on a 4-point scale ranging from 0 (strongly disagree) to 4 (strongly agree) and encompasses five essential components: learning motivation, teaching mode, learning ability, learning attitude, and environmental factors. It is recognized as a reliable and valid instrument for assessing the adaptability of EFL learners, exhibiting strong internal consistency ($\alpha > 0.7$) (Feng et al., 2005). In the existing research route, the reliability coefficient was reported as 0.833, and its construct validity was confirmed through confirmatory factor analysis (CFA), as detailed in the results section.

3.2.3. Plurilingual and pluricultural competence (PPC) scale

Galante's (2022) PPC scale was employed to evaluate Iranian EFL learners' self-assessments of their PPC. This instrument consists of 22 items rated on a 4-point scale, ranging from 0 (strongly disagree) to 4 (strongly agree). The scale positions PPC as a singular component, highlighting the interrelationship between culture and language. The reliability of the scale has been established with a Cronbach's alpha of 0.782, and its validity was confirmed through CFA, as detailed in the results section. Furthermore, Galante (2022) asserted that her newly developed instrument, which demonstrates a reliability coefficient of $\alpha = 0.84$, is a valid tool for future research and pedagogical practices in plurilingual and pluricultural contexts.

3.3. Data collection procedure

All participants were fully informed about the primary objective of this study and asked to sign an electronic consent form. It was recognized that quantitative data would enhance and expand upon the new insights gained from this project. To collect data, three electronic questionnaires were used: the SE scale (Lam et al., 2014), the adaptability scale (Feng et al., 2005), and the PPC scale (Galante, 2022), all administered via Google Forms. The first section consisted of a demographic questionnaire designed to gather details on gender, age, language background, and grade level. Participants received comprehensive information about the instruments used in the study as well as its purpose. The questionnaires were primarily in English with Persian translations provided where necessary. Completing these questionnaires took approximately 20 minutes per participant in one session, while the entire data collection process spanned two months from November to December 2023. Participants received a link to access and fill out these forms.

3.4. Data analysis

A comprehensive descriptive statistical analysis was performed to explore the profile trends associated with each variable, employing key measures such as the *mean* (M), *standard deviation* (SD), and the range of item averages, which included both minimum and maximum values. Moreover, correlation analysis was conducted to examine the relationships between adaptability, PPC, and SE. To delve deeper into the relationships between the variables, mediation analysis was conducted using the PROCESS macro in SPSS version 26 based on the recommendations by Hayes and Rockwood (2017). This analysis purposed to uncover the intricate dynamics between the variables, providing insights into their interconnectedness.

In advance of the primary analysis, CFA was executed to evaluate the convergent and discriminant validity of the measurement instruments utilized in the study. Also, the internal consistency of the measures was assessed using Cronbach's alpha, with a reliability threshold set at 0.7, as recommended by Tabachnick et al. (2013). This rigorous approach ensured that the measurement tools were both valid and reliable, laying a strong foundation for subsequent analyses.

4. Results

4.1. Preliminary analysis

4.1.1. CFA for instruments

Simultaneously with descriptive and correlations analyses, we performed a CFA for each instrument to evaluate their construct validity. This evaluation not only provided insights into the validity of the constructs but also simplified the exploration of potential enhancements to the scale's structure. Furthermore, the reliability of each factor within the scales was assessed using Cronbach's alpha, ensuring a thorough judgement of the measurement instruments.

Concerning Kline (2023) and Meyers et al. (2008), the PPC scale exhibited vigorous psychometric properties, evidenced by a Normed Chi-Square (NC) value of 2.1, a Comparative Fit Index (CFI) of 0.975, a Root Mean Square Error of Approximation (RMSEA) of 0.051, and a Standardized Root Mean Square Residual (SRMR) of 0.04. The model retained 22 items, each of which showed significant loading factors above 0.5, ranging from a minimum of 0.52 to a maximum of 0.88. Reliability analysis yielded a Cronbach's alpha of 0.782, indicating strong internal consistency among the items. Additionally, the Average Variance Extracted (AVE) coefficient was calculated at 0.66, surpassing the acceptable threshold of 0.50. The outcomes of the descriptive validity test conducted with Heterotrait-Monotrait (HTMT) analysis generated a coefficient value of 0.797. These results jointly support the conclusion that the constructs of the scale fulfill the criteria for both reliability and validity.

The five-factor adaptability scale portrayed strong psychometric properties, evidenced by a NC of 1.79, a CFI of 0.981, a RMSEA of 0.049, and a SRMR of 0.07. The model effectively retained 29 items, with each item demonstrating significant factor loadings exceeding 0.5, ranging from a minimum of 0.54 to a maximum of 0.89. The scale's trustworthiness was solid, as indicated by a Cronbach's alpha of 0.833, which reflects excellent internal consistency. Furthermore, the AVE coefficient was determined to be 0.71, exceeding the ideal threshold of 0.50. The assessment of discriminant validity produced favorable outcomes, as shown by the HTMT analysis. The HTMT values were below the 0.85 threshold, specifically at 0.67, demonstrating adequate discriminant validity. Overall, these results affirm that the constructs in the scale adhere to recognized criteria for both reliability and validity.

The model fit for the SE scale demonstrated well-built psychometric properties, with a NC of 1.82, a CFI of 0.982, a RMSEA of 0.046, and a SRMR of 0.06. The model successfully retained 20 items, each exhibiting significant loading factors greater than 0.5, ranging from a minimum of 0.57 to a maximum of 0.83. The scale's reliability was confirmed with a Cronbach's alpha of 0.884, indicating excellent internal consistency. Additionally, the AVE coefficient was calculated at 0.68, surpassing the recommended threshold of 0.50. The HTMT values were 0.44, which is below the 0.85 threshold, designating adequate discriminant validity. These results collectively demonstrate that the constructs of the scale meet the established standards for both reliability and validity.

4.1.2. Descriptive data and the relationship between factors (responses to the first research question)

Table 2 presents descriptive statistics for the study variables, including the mean, standard deviation, minimum and maximum values, as well as measures of skewness, kurtosis, and bivariate correlations. The descriptive analysis of the dataset reveals significant insights into the various factors influencing SE and motivation. The mean scores for Adaptability ($Mean = 87.71$, $SD = 11.94$) indicate a strong adaptability among participants, which may correlate positively with other engagement measures. In contrast, the mean for Learning Attitude ($Mean = 10.95$, $SD = 2.04$) suggests a more moderate level of positive disposition towards learning. The skewness and kurtosis statistics for most variables, such as PPC (Skewness = 0.06, Kurtosis = 0.80) and Learning Motivation (Skewness = -0.53, Kurtosis = 0.14), suggest relatively normal distributions, although some variables like Behavioral Engagement (Skewness = -1.31, Kurtosis = 2.02) exhibit significant negative skewness, indicating a concentration of higher values and potential outliers that could affect interpretations.

As shown in table 2, the relationships between the factors, as indicated by Pearson correlation coefficients, highlight several noteworthy associations. For instance, the strong correlation between Adaptability and Learning Motivation ($r = 0.906$, $p < 0.01$) suggests that higher adaptability is closely linked to increased motivation levels, which could enhance overall engagement. Similarly, Cognitive Engagement shows a robust correlation with SE ($r = 0.805$, $p < 0.01$), indicating that cognitive processes significantly influence students' engagements in learning environments. Likewise, the correlation between Teaching Mode and Learning Ability ($r = 0.483$, $p < 0.01$) underscores the importance of instructional strategies in shaping learners' capabilities. These findings emphasize the interconnectedness of various factors in educational settings and the potential for targeted interventions to improve student outcomes by strengthening specific areas such as adaptability and cognitive engagement.

Table 1. Descriptive data and correlation between the factors

Variables/Factors	1	2	3	4	5	6	7	8	9	10	11	12
1.PPC (V)	1	.285**	.343**	.265**	.196**	.241**	.111**	.152**	.340**	.187**	.211**	.250**
2.Adaptability (V)		1	.776**	.906**	.821**	.799**	.474**	.276**	.619**	.629**	.583**	.412**
3.Student Engagement (V)			1	.739**	.635**	.646**	.305**	.128**	.805**	.781**	.672**	.662**
4.Learning Motivation				1	.711**	.680**	.358**	.095**	.616**	.584**	.578**	.372**
5.Teaching Mode					1	.483**	.398**	-.051	.449**	.548**	.614**	.231**
6.Learning Ability						1	.181**	.240**	.577**	.526**	.321**	.400**
7.Learning Attitude							1	-.101*	.215**	.269**	.391**	.070
8.Environmental Factors								1	.117**	.085*	-.045	.210**
9.Cognitive Engagement									1	.435**	.388**	.475**
10.Affective Engagement										1	.401**	.347**
11.Behavioral Engagement											1	.136**
12.Agentive Engagement												1
Mean	60.16	87.71	60.54	25.41	21.27	18.50	10.95	11.61	14.99	15.14	17.12	13.12
SD	5.52	11.94	8.27	4.37	4.29	3.50	2.04	2.38	2.74	3.27	3.74	2.67
Min	40.00	46.00	29.00	8.00	7.00	6.00	4.00	4.00	6.00	5.00	5.00	5.00
Max	79.00	114.00	79.00	32.00	28.00	24.00	16.00	16.00	20.00	20.00	20.00	19.00
Skewness	0.06	-0.32	-0.29	-0.53	-0.43	-0.58	-0.21	-0.32	-0.31	-0.71	-1.31	-0.22
Kurtosis	0.80	-0.15	0.04	0.14	-0.07	0.82	0.53	0.18	-0.01	0.25	2.02	-0.14

**Correlation is significant at the 0.01 level (2-tailed).
 *Correlation is significant at the 0.05 level (2-tailed).

4.2. Mediation analysis

To scrutinize the mediatory role of PPC in the relationship between adaptability and engagement, we implemented the PROCESS macro in SPSS version 26 (Hayes & Rockwood, 2017). This analysis also incorporated several covariate variables, including gender, age, language background, and grade level. The results of this comprehensive analysis are presented in Table 2, spotlighting the intricate mechanisms between these variables. The developed model, along with its associated coefficients, is depicted in Figure 2.

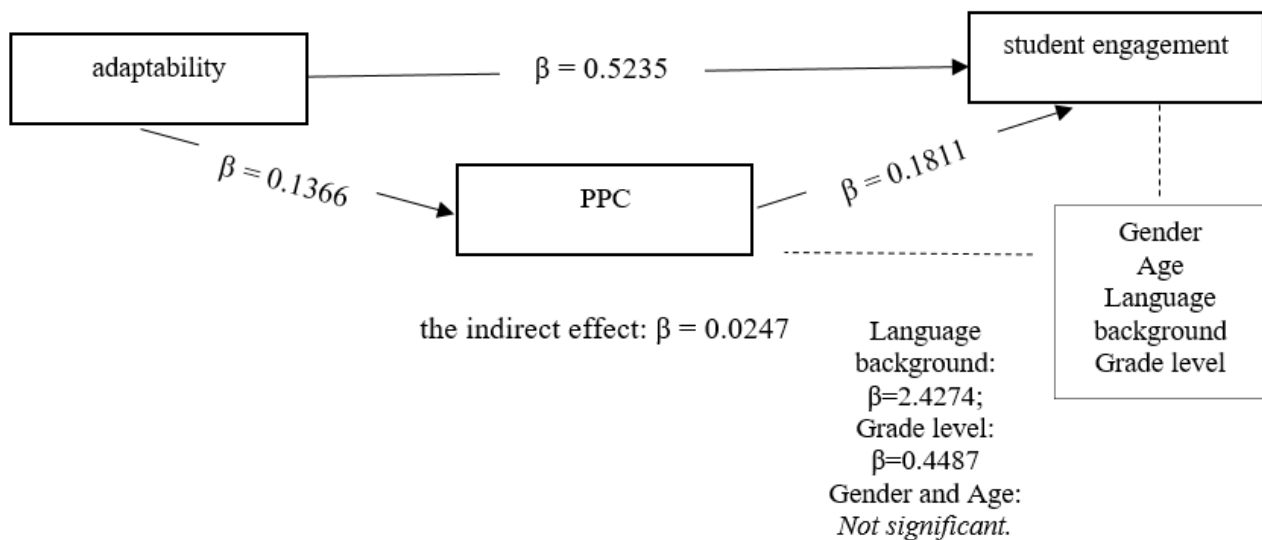


Figure 2. Mediation model of PPC in terms of the relationship between adaptability and SE

4.2.1. The possible predictors of PPC and SE (responses to the second and third research questions)

Regarding the second research question on how adaptability predicts PPC, the analysis indicated that adaptability is a significant predictor of PPC ($\beta = 0.1366$, $SE = 0.0204$, $t = 6.6863$, $p < 0.001$). This suggests that for each unit increase in adaptability, PPC increases by approximately 0.1366 units. In addressing the third research question about how PPC predicts SE, the results demonstrated that PPC is a significant predictor of SE ($\beta = 0.1811$, $SE = 0.0463$, $t = 3.9084$, $p < 0.001$). This indicates that an increase in PPC is associated with an increase in SE by approximately 0.1811 units.

4.2.2. The direct/indirect role of PPC (responses to the fourth research question)

Finally, for the fourth research question examining how adaptability predicts SE both directly and through mediation by PPC, the direct effect of adaptability on SE was found to be significant ($\beta = 0.5235$, $SE = 0.0210$, $t = 24.8830$, $p < 0.001$). The indirect effect of adaptability on SE through PPC was also significant (indirect effect $\beta = 0.0247$, $SE = 0.0081$). These findings highlight that adaptability not only directly influences SE but also does so indirectly through its effect on PPC (Table 3).

Table 3. Analysis of covariate variable

Outcome Variable	Coeff	SE	t	p	LLCI	ULCI
OUTCOME VARIABLE: PPC						
Constant	45.3391	2.4194	18.7397	.0000	40.5843	50.939
Adaptability	0.1366	0.0204	6.6863	.0000	0.0965	0.1768
Gender	0.3736	0.5687	0.6570	.5115	-0.7440	1.4912
Age	-0.0758	0.0888	-0.8539	.3936	-0.2503	0.0987
Language background	2.4274	0.5551	4.3729	.0000	1.3365	3.5184
Grade	0.0242	0.1870	0.1295	.8970	-0.3433	0.3917
OUTCOME VARIABLE: engagement						
Constant	-0.4589	3.1716	-0.1447	.8850	6.6920	5.7742
Adaptability	0.5235	0.0210	24.8830	.0000	0.4822	0.5649
PPC	0.1811	0.0463	3.9084	.0001	0.0900	0.2722
Gender	0.8219	0.5587	1.4711	.1420	-0.2761	1.9199
Age	0.1157	0.0873	1.3266	.1853	-0.0557	0.2872
Language background	-0.2069	0.5566	-0.3718	.7102	-1.3008	0.8869
Grade	0.4487	0.1836	2.4438	.0149	0.0879	0.8096
Direct and Indirect Effects of X on Y						
Direct Effect of X on Y	0.5235	0.0210	24.8830	.0000	0.4822	0.5649
Indirect Effect of X on Y (PPC)	0.0247	0.0081			0.0106	0.0419

Note. Coeff is the Coefficient Value of each variable; LLCI stands for Lower Level Confidence Interval; ULCI stands for Upper Level Confidence Interval

4.2.3. The influence of covariate factors (gender, age, language background, and grade level)

A supplementary analysis using the PROCESS macro in SPSS version 26 identified significant relationships between various variables and the outcomes of interest with regard to the project by Hayes and Rockwood (2017). For the outcome variable PPC, the model showed a moderate effect ($R^2 = 0.1404$, $p < 0.0001$), with adaptation having a strong positive coefficient ($\beta = 0.1366$, $p < 0.0001$) and language background also contributing positively ($\beta = 2.4274$, $p < 0.0001$), while gender and age were not significant. In contrast, the analysis for SE revealed a strong model fit ($R^2 = 0.6334$, $p < 0.0001$), with adaptability again showing a significant positive relationship ($\beta = 0.5235$, $p < 0.0001$) and PPC positively contributing ($\beta = 0.1811$, $p < 0.0001$).

To summarize, adaptability significantly predicts both PPC and SE directly, and it also influences SE indirectly through PPC. These findings underscore the importance of adaptability in ameliorating PPC and, consequently, SE, providing valuable insights for educational interventions aimed at improving student outcomes.

5. Discussion

The present study aimed to explore the relationships between adaptability, PPC, and SE, particularly in the context of EFL education in Iran. Considering the nature of SE, this research journey also conducted to elucidate how adaptability can enhance SE through fostering the development of PPC focusing on a proposed model.

Focusing on the first research question, a positive association between adaptability and PPC has been identified, suggesting that students with higher adaptability are better equipped to develop effective communication skills and navigate

diverse cultural contexts. This aligns with Kahu's (2013) findings that adaptable students engage more actively in their learning, resulting in improved academic outcomes. Prior research supports this, indicating that adaptability involves flexibility, individuality, initiative, and reflection, all of which contribute to navigating diverse contexts (Zhang & Liu, 2024). Additionally, Research confirms that PPC enhances self-efficacy through cultural competence, not just linguistic skills (Kantelinen et al., 2024; Trenchs-Parera & Pastena, 2024). PPC's correlation with heightened SE underscores the importance of cultural awareness and linguistic proficiency for active participation. In some studies, (Liu et al., 2023; Mohammad Hosseini, 2022; Zhang et al., 2021) the interconnectedness of adaptability and language competence in boosting SE in plurilingual environments is highlighted, contrasting with previous separate examinations

The results of the second research question uncovered a meaningful relationship between adaptability and PPC, suggesting that students with higher adaptability are more likely to develop effective communication skills and cultural understanding. The findings are in agreement with Kahu's (2013) assertion that adaptability predicts SE and supports Liu et al. (2023) and Wang et al. (2023), who emphasized its role in enhancing emotional and cognitive investment in learning. Specifically, personality traits such as extroversion and openness, which are components of adaptability, positively influence e-learning engagement (Wu & Yu, 2024). While previous studies examined adaptability and PPC separately, this research highlights the interconnectedness of adaptability and PPC, demonstrating that adaptability facilitates PPC development and enriches learning by promoting linguistic and cultural diversity, advocating for an integrated approach in language education.

The third research question confirmed a positive correlation between PPC and SE, suggesting that students with advanced PPC levels are more likely to engage actively in their educational environments. It is consistent the outcomes by Liu et al. (2022), who found connections between cultural competence and SE in EFL contexts. Further supporting this, Eren (2024) found that higher plurilingual awareness predicts better intercultural communicative competence. Importantly, this research extends prior literature by showing that Plurilingual and Pluricultural Competence (PPC) not only correlates with but also predicts self-efficacy (SE), emphasizing the importance of fostering cultural and linguistic skills to enhance SE and participation, contrasting with earlier studies like Mohammad Hosseini et al. (2022) and Trenchs-Parera & Pastena (2024).

The findings illustrated that adaptability predicts SE both directly and indirectly through the mediation of PPC, highlighting a meaningful interrelationship in student involvement in learning. Adaptability positively affected engagement and enhances it by developing PPC levels, aligning with Kahu's (2013) emphasis on adaptability's role in promoting active participation and positive educational outcomes. This research builds on Liu et al. (2022), which linked SE to psychological factors like resilience and mindfulness, positioning PPC as a crucial mediator. Zhang et al. (2021) also demonstrated that adaptability enhances SE, particularly by fostering positive academic emotions and reducing negative ones. Unlike prior studies by Wang et al. (2023) and Mohammad Hosseini et al. (2022) that examined adaptability and engagement separately, this study underscores PPC's critical role in their interplay, advocating for a comprehensive understanding of the mechanisms that support effective language education.

The final phase of the study revealed that factors like gender, age, language background, and grade level do not significantly moderate the relationships between adaptability, PPC, and SE. Specifically, gender and age were not significant predictors of PPC and grade was a significant predictor of engagement. Also, language background was a significant predictor of PPC. These findings are consistent with research showing that language background influenced PPC development (Liu et al., 2022), and familial plurilingualism contribute to transcultural competence (Trenchs-Parera & Pastena, 2024). Overall, this comprehensive examination emphasized the importance of considering demographic and contextual variables in analyzing SE, advocating for tailored educational strategies that address diverse learner characteristics.

The results of this research conform to the PERMA model (Seligman, 2018) by showing that adaptability and PPC enhance self-efficacy in EFL contexts. Adaptable students develop PPC, boosting engagement levels and fostering a positive learning environment (Kahu, 2013). As Seligman (2018) asserts, adaptability increases positive emotions and engagement, which are crucial for a flourishing life. Moreover, the predictive capacity of PPC regarding SE highlights its role in creating meaningful educational experiences that resonate with Seligman's emphasis on relationships and accomplishment (Seligman, 2018).

The study also signals that demographic factors such as gender and age moderate these relationships, suggesting that educational strategies should be tailored to address these variables to optimize SE. Overall, this research not only reinforces existing literature on adaptability and PPC but also expands the understanding of their interconnectedness within the framework of positive psychology, advocating for an integrated approach to language education that prioritizes these constructs for improved academic outcomes.

The current examination emphasized the crucial role of SE in EFL education, showing that adaptability enhances engagement directly and indirectly through PPC. Students proficient in navigating cultural contexts and developing PPC are more actively involved in learning. The research builds on previous theories and highlights the importance of factors like gender, age, language background, and grade level in shaping these dynamics. It advocates for an integrated educational approach that fosters adaptability and PPC to improve SE and academic outcomes in plurilingual settings.

6. Conclusion

This study investigated the intricate relationships between adaptability, PPC, and SE within an Asian EFL context. The findings reveal that higher levels of adaptability significantly predict enhanced PPC, which in turn fosters greater SE both directly and indirectly. This dual influence underscores the importance of cultural competence and effective communication skills in promoting active participation in language learning. Additionally, the research identifies covariate factors, particularly gender and age, as not influential on PPC while grade level is a significant element for engagement, suggesting that educational strategies should focus on enhancing adaptability and PPC to improve SE across diverse learning environments. This study emphasizes the importance of adaptability and PPC in fostering SE among EFL learners. Future research should explore these dynamics across diverse cultural contexts to refine teaching practices. By integrating these findings into educational policies, educators can create more inclusive environments that prepare learners for global success.

The findings of this study highlight a crucial route for educators to consider when designing inclusive curricula: by prioritizing adaptability training and peer support systems, educators can create more supportive learning environments that meet diverse student needs. Future studies could further explore how technology integration might amplify these effects by providing personalized feedback mechanisms and adaptive assessments tailored to individual learners' requirements. It is noteworthy that higher-level cognitive processes could reinforce deeper engagement, so specific courses offer learners valuable opportunities for interactive reflection and refinement of their engagement effectively. Ultimately, fostering a culture of inclusivity through adaptable teaching methods will be pivotal in maximizing SE and success in EFL settings worldwide.

The implications of this research are profoundly significant for educators and policymakers, particularly in EFL settings, as they strive to create more inclusive and effective learning environments. By integrating adaptability training and PPC development into educational curricula, EFL instructors can foster SE, contributing to a more culturally responsive educational framework. This approach not only enhances EFL learners' language skills and cultural awareness but also supports broader educational goals by cultivating a more engaged, adaptable, and resilient student body. Consequently, it aligns with the overarching objective of modern education: creating an environment where students feel supported while developing essential life skills such as adaptability and cultural competence. By embracing these strategies, educators play a pivotal role in shaping future generations that are proficient in foreign languages and adept at navigating diverse social contexts effectively.

The present project offers valuable insights, yet it also highlights several limitations that necessitate further investigation. The sample of 599 Iranian EFL learners might not accurately represent other educational contexts due to cultural differences and the diverse ethnic groups within Iran, as well as the unique characteristics of Iranian private language institutes. To gain a deeper understanding of how adaptability and PPC develop over time and their lasting effects on engagement, longitudinal studies are essential. Moreover, relying solely on self-reported data may introduce biases, suggesting that future research should incorporate observational or performance-based assessments to provide more objective findings. Extensive exploration of these themes is crucial for refining effective teaching strategies that foster intercultural understanding and active participation among learners. By addressing these limitations, future studies can validate and build upon these findings, finally enriching our comprehension of the factors contributing to SE in diverse educational settings.

To conclude, incorporating adaptability training and PPC development into educational systems, particularly in EFL contexts, helps establish a nurturing environment where learners feel appreciated, inspired, and empowered to excel in today's globalized society. As educators face the challenges of diverse cultural landscapes within international EFL environments, adopting these approaches will be vital for cultivating a new generation of flexible and engaged EFL learners who are well-equipped to flourish in culturally diverse settings.

7. References

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