

Culture and emotion in educational dynamics, volume III

Edited by

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Culture and emotion in educational dynamics, volume III

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Editorial: Culture and emotion in educational dynamics, volume III

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KEYWORDS

culture, emotion, educational, dynamic, methodology in educational research

Editorial on the Research Topic

Culture and emotion in educational dynamics, volume III

This volume continues an editorial line that seeks to integrate the understanding of emotions in educational processes with a culturally situated approach. Previous volumes laid the theoretical foundations of this interrelationship, while this new compendium delves into its practical and methodological expressions in diverse contexts. Thus, the reader is invited to explore a critical mapping of emotions as a constitutive part of educational work, from the perspective of those who teach, learn, support, and transform.

Volume III of “*Culture and emotion in educational dynamics*” expands the analysis of the complex interrelationship between cultural and emotional factors that shape contemporary educational contexts. This editorial offers a thematic review of the multidimensional content that constitutes this ever-evolving field of study.

The current work is structured around four thematic axes: the first examines emotional intelligence and its assessment methods in different educational communities; the second focuses on teacher wellbeing and professional trajectory, considering aspects such as identity construction, institutional support, and emotions related to professional practice; the third block explores emotional dynamics and psychosocial factors involved in language learning and intercultural student experiences; finally, the fourth axis addresses family participation and intercultural sensitivity in educational spaces.

The first thematic axis of the volume focuses on emotional intelligence as a key competence that permeates the educational experience. The research gathered here shows how the development of this skill can be promoted through pedagogical approaches that are contextualized and culturally relevant.

Block 1: Emotional Intelligence in Diverse Educational Communities Emotional intelligence (EI) is recognized as a crucial factor for wellbeing and success in the educational sphere. Its development can be fostered through specific pedagogical approaches, as investigated by the study of [Lasekan et al.](#) This work explores the role of emotional vocabulary in enhancing EI among future teachers of English as a foreign language (EFL), using the Headway series. Its objective was to quantify, categorize, and develop a systematic teaching model to improve EI. Through a mixed-methods approach, the study revealed a progressive increase in emotional vocabulary as competence levels advanced. Positive emotions were more frequent at beginner levels, while negative and neutral ones increased at higher stages, supporting the development of self-regulation and empathy. The proposed model offers a structured framework that addresses key components of EI such as self-awareness, social skills, and emotional regulation, representing a valuable contribution to teacher training programs.

In the second block, the focus shifts to teachers, analyzing how their identity trajectories, working conditions, and emotional wellbeing affect educational quality. The studies presented here advocate for a comprehensive view of teacher professional development.

Block 2: Teacher Wellbeing and Professional Development: Identity, Support, and Emotions Teacher professional identity and educator wellbeing are crucial for an effective educational system. The study by [Luo et al.](#) explores how different perceived school goal structures affect the professional identity of kindergarten teachers in China, considering the mediating role of the satisfaction of basic psychological needs (SBPN) and the moderating role of a growth mindset. With a sample of 1,475 teachers, the results showed that learning and performance goal structures indirectly affected professional identity through SBPN, although only the learning goal structure had a direct effect. Interestingly, the growth mindset only moderated the relationship between performance goal structure and SBPN. This study provides a theoretical basis and practical guidance for improving teacher professional identity in the Chinese sociocultural context.

Emotional support provided by teachers also plays a fundamental role in student performance. [Wu and Yu](#) investigate the influence of formative assessment on academic achievement, exploring the mediating role of teachers' emotional support. Analyzing data from 280 secondary students in southern China, they confirmed that teachers' emotional support mediates the relationship between formative assessment and academic performance, highlighting the importance of integrating emotional support strategies in formative assessment.

Professional honor is another important factor for teachers, especially in rural areas. [Chen et al.](#) examine the influence of demographic factors (gender, age, and region) on the professional honor of 1,320 rural teachers in China. Their analyses revealed that female teachers reported higher levels of professional honor, teachers in the Eastern Region showed more honor than those in the Western Region, and those aged 31 to 40 exhibited the lowest professional honor. These findings are key to addressing challenges in the prestige and retention of rural teachers.

Finally, professional burnout is a significant concern. The study by [Liang and Yin](#) analyzes burnout in university counselors in China and the moderating role of emotional intelligence in the relationship between emotional labor and burnout. A survey of 520 counselors indicated that burnout increases with age, being highest between ages 26 and 30. Addressing burnout from both individual and organizational dimensions is recommended, with a focus on improving emotional intelligence.

The third axis offers a deep look at the emotions that emerge in linguistic and intercultural learning contexts. The research highlights how factors such as teacher support, anxiety, enjoyment, and perseverance intertwine to shape students' experiences.

Block 3: Emotional and Cultural Dynamics in Language Learning and Intercultural Student Experience Learning a foreign language is a process deeply influenced by emotional factors and perceived support. The study by [Pan et al.](#) investigates the associations between students' grit and perceived teacher support with their performance in the Chinese language, considering the mediating role of emotions (enjoyment, anxiety, and boredom)

in Thai secondary classrooms. With 665 students, the results indicated that teacher support, grit, and emotions were significantly associated with performance. While all three emotions mediated the relationship between teacher support and performance, only enjoyment mediated the association between perseverance and performance. The study highlights the importance of fostering perseverance, supportive environments, and addressing students' emotional needs.

Understanding the theoretical foundations of emotions in this context is essential. [Wu and Kabilan](#) provide a review of theories on emotion in the language classroom, focusing on their conceptualization and causality. They argue that few studies have deeply investigated underlying theoretical frameworks and identify the effects of interactions among cognitive, psychological, social, and contextual factors in emotional development.

Emotional interactions in the classroom are dynamic. The study by [Jiang](#) explores emotional contagion between adult English students and their teacher in China. It identified negative emotions (student anxiety provoking teacher self-doubt) and positive emotions (student calm promoting teacher tranquility). These findings challenge traditional assumptions by identifying students as primary initiators of emotional contagion.

Vocal emotion recognition also has a cultural dimension. [Cheng et al.](#) investigated cross-regional cultural recognition of emotion in adolescents' voices. Their experiments confirmed that Chinese adolescents demonstrated a greater ability to recognize vocal emotions within their own cultural group, a skill that is accentuated with greater cultural differences.

Social support is vital for students in new environments. The study by [Fu](#) validated the Index of Sojourner Social Support (ISSS) among internal migrant university students in China, exploring how support facilitates psychological adjustment. With 1,692 students, it was found that instrumental support, in particular, significantly influenced students' psychological adjustment to the host culture. The study concludes that the scale is psychometrically sound and that instrumental support is key to adjustment.

The final block focuses on the role of families and the importance of fostering intercultural sensitivity in schools. It examines the conditions that favor or hinder the participation of migrant families in school processes, as well as the impact of institutional climate on such participation.

Block 4: Family Participation and Intercultural Sensitivity in Educational Settings Family-school collaboration is fundamental, especially in immigration contexts. The study by [Bilbao et al.](#) examines the role of intercultural sensitivity in predicting immigrant parents' participation in early childhood education in Chile. With a sample of 347 parents, it was shown that greater intercultural sensitivity predicted higher participation. Parents with lower intercultural sensitivity were 75% more likely to report "almost never" participating. Among the barriers, parents who perceived that the school lacked a special approach for immigrant families were 3.79 times more likely to report low participation. These findings highlight the importance of promoting intercultural sensitivity in school communities.

Expanding on this line, [Mera-Lemp et al.](#) investigate the relationships between school cultural diversity climate,

cultural sensitivity, and school participation among 751 Venezuelan and Peruvian immigrant parents in Chile. The results showed that sociodemographic variables had limited effects on participation, while the cultural diversity climate and cultural sensitivity had greater influence. This study emphasizes the importance of schools' approach to cultural diversity and parents' intercultural competencies in their commitment to their children's education.

The studies compiled in this volume provide empirical evidence and robust conceptual frameworks to understand how emotions and culture intertwine in school life. Beyond specific contexts, the investigations engage in dialogue to propose a more human, inclusive, and situated educational vision. In doing so, this volume aims to contribute to an education that recognizes emotional and cultural diversity as an asset, rather than a barrier, thereby strengthening teaching and learning processes at all levels of the educational system.

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Cross-regional cultural recognition of adolescent voice emotion

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Background: In previous studies, an in-group advantage in emotion recognition has been demonstrated to suggest that individuals are more proficient in identifying emotions within their own culture than in other cultures. However, the existing research focuses mainly on the cross-cultural variations in vocal emotion recognition, with limited attention paid to exploring intracultural differences. Furthermore, there is little research conducted on the ability of adolescents to recognize the emotions conveyed by vocal cues in various cultural settings. To fill these research gaps, three experiments were conducted in this study to explore the differences among different regions within a culture.

Methods: The study involved three experiments. In Experiment 1, a within-subjects design of 2 (language: Mandarin vs. English) × 4 (emotion: anger vs. fear vs. happiness vs. sadness) was used to establish whether adolescents exhibit a similar in-group advantage in vocal emotion recognition with adults. As an expansion of Experiment 1, Experiment 2 incorporated the Shaoxing dialect to assess the ability of adolescents to identify the emotions in voices across different cultural regions of a nation. In Experiment 3, the regional variation was extended by substituting the Shaoxing dialect with Tibetan to explore the disparities in vocal emotion recognition among adolescents.

Results: As indicated by the results of Experiment 1, Mandarin-speaking adolescents performed well in recognizing emotions in Mandarin compared to English. In Experiment 2, the results of Experiment 1 were replicated to reveal that Shaoxing-speaking adolescents performed better in emotion recognition of Mandarin in comparison to the Shaoxing dialect and English. As indicated by Experiment 3, both Mandarin-speaking adolescents and Tibetan-speaking adolescents possessed a higher capacity of vocal emotion recognition within their own language groups.

Conclusion: Chinese adolescents demonstrated a stronger ability to recognize vocal emotions within their own cultural group compared to other regional cultures, an advantage that became more pronounced as the cultural differences between groups increased. These findings underscore the significance of cultural factors in adolescent emotional recognition research, indicating the directions of cross-cultural interventions.

KEYWORDS

emotion recognition, cross-cultural, in-group advantage, adolescents, cultural exposure

1 Introduction

Defined as the skill of accurately identifying and distinguishing emotional states through observation of the valid cues in others' behavior, emotion recognition plays a crucial role in everyday social interactions (Cotter et al., 2018; Spunt and Adolphs, 2019). This skill is essential for dealing with the complexities within human communication, as it enables individuals to respond appropriately to the emotional expressions of others, thus facilitating empathy and cooperation. As a specific form of emotion recognition, voice emotion recognition focuses on examining the unique acoustic features in a speaker's voice to recognize their emotional state. These features include pitch, volume, tempo, voice quality and intonation patterns, all of which are useful to convey critical information about the speaker's emotional tone. As online vocal communication becomes more frequent, voice emotion recognition plays an increasingly important role in human social interaction.

Some studies have found that the constrained metrical space in language can hinder tone languages, such as Chinese, in effectively conveying emotions compared to non-tone languages, such as English (Ross et al., 1986; Cruttenden, 1997; Ip and Cutler, 2020; Schwarz et al., 2023). With tones used for lexical distinctions, tone languages may involve the limited use of paralinguistic for emotional expression, which may compromise the accuracy in recognizing vocal emotions. Conversely, non-tone languages are more flexible in manipulating intonational contours, which allows for more nuanced emotional expression (Zhu, 2013). However, the in-group advantage holds that individuals are more adept at discerning vocal emotions from members of their own cultural group. This concept underscores the significant role of culture in shaping emotional expression, with the perception of emotions potentially influenced by geographical and dialectal variations (Paulmann and Uskul, 2014). This is also related to cultural exposure, as the recognition and interpretation of emotions within and across cultural boundaries can be modulated by the degree and nature of exposure to different cultures (Elfenbein and Ambady, 2003a; Elfenbein and Ambady, 2003b). There is a large amount of evidence demonstrating that cultural exposure exerts influence on emotion recognition across different cultures. Native speakers and second language speakers differ in the expression of certain emotions (Liu et al., 2015).

Despite the universal systems of emotional expression, some degree of cross-cultural recognition is enabled, with the unique emotional expression patterns of each culture sculpted by a confluence of cultural traditions, social norms, and educational practices (Laukka et al., 2014). The empirical research on cross-cultural vocal emotion recognition is consistent in advocating for the in-group advantage (Albas et al., 1976; Scherer et al., 2001; Sauter, 2013; Laukka et al., 2014; Laukka and Elfenbein, 2021). Nevertheless, there are few comparative studies conducted between tone languages and non-tone languages. Therefore, it is crucial to conduct research in this regard, especially considering the further exploration of emotional recognition among various dialects within spoken languages.

The current research focuses mainly on the emotion recognition across regional cultures within the same nation. As the second-largest language family with the highest number of speakers, Chinese exhibits unique characteristics as a tone language (Wang et al., 2014).

Mandarin, which represents the dominant language in China, Wu language (with Shaoxing dialect being one of its variants) as a

significant regional variety, and Tibetan, an important ethnic language, all belong to the Sino-Tibetan language family. Similar to Mandarin, the Shaoxing dialect exhibits four tonal patterns. However, in comparison, the Shaoxing dialect potentially shows a greater diversity of falling and rising tonal variations, and the pitch fluctuations within the same tonal classification are more intricate (Li and Yang, 2024). Tibetan, likewise, involves four tones. Although the pronunciations of the first, second, and fourth tones in Tibetan bear resemblance to those in Mandarin, the third tone (the upper tone) in Tibetan differs from its counterpart in Mandarin. Tibetan is an inflected language, featuring a rich array of vowels and consonants, with special laryngeal sounds included (Cui and Zhang, 2009). Under the context of Chinese culture, a substantial research gap to fill is to dissect the cross-regional cultural variances in the perception of emotions.

There remains uncertainty in the extent to which voice emotion recognition is consistent between adolescents and adults. Although it has been established in prior studies that Chinese adults possess an in-group advantage in cross-cultural vocal emotion recognition, the research on this phenomenon among adolescents is still limited. According to the study conducted by Vidas et al. (2018), children aged 8 or over demonstrate comparable abilities to adults in identifying musical emotions. It has been shown in other studies that the capability to recognize emotions may vary depending on the specific emotion and age group. For instance, it is suggested in the research of Chronaki et al. (2015) that the recognition of sadness and happiness in non-verbal vocalizations matures earlier than the recognition of anger and fear. However, the overall performance in emotion recognition typically reaches adult levels by the age of 15 (Grosbras et al., 2018). Furthermore, Amorim et al. (2021) investigated the changes in vocal emotions recognition across different age groups, from children to the elderly. It was revealed that the accuracy in vocal emotion recognition shows improvement from childhood to early adulthood but decline in older age groups. Focusing on the adolescents aged 12–15, this study determined if they also exhibit a similar advantage in recognizing emotions within their age group, as seen in adults under cross-cultural contexts.

The objective of this study is to explore the existence of an in-group advantage in the recognition of vocal emotions among adolescents from diverse Chinese cultural backgrounds. To achieve this objective, an investigation will be conducted using Mandarin, Shaoxing dialect, and Tibetan dialect as experimental stimuli for assessment of the cultural distance in emotion recognition accuracy.

2 Experiment 1: cross-cultural voice emotions recognition in adolescents

2.1 Methods

2.1.1 Participants

The experiment was conducted by randomly recruiting 87 middle school students (43 boys, 44 girls) aged between 13 and 15 years old, with an average age of 13.98 years. The primary language spoken by the participants was Mandarin. [Supplementary Table 2](#) can be referred to for further details regarding participant information and language proficiency. All the participants had normal vision or corrected vision and normal hearing. Those with mental illnesses, severe psychological

disorders, autism, or other emotional recognition disorders were excluded. Participants were also given a gift as a token of appreciation following the experiment. Prior to the study, informed consent was obtained from both the participants and their parents. Conducted in strict accordance with the applicable ethical standards, this study was approved by the Shaoxing University Ethics Committee (No. 2023–060-01). G*Power 3.1 software was applied to calculate a two-factor repeated measures ANOVA with a statistical power of 80%, a significance level of 0.05, an effect size of 0.25 (medium scale according to Cohen, 2013), and a minimum sample size of 48.

2.1.2 Materials

The audio materials used in Experiment 1 were carefully selected according to the previous research conducted by Paulmann and Uskul (2014) and Liu and Pell (2012). To ensure the accuracy and consistency of emotions being expressed, these studies had been thoroughly recorded and rated. Four fundamental emotions (anger, fear, happiness, and sadness) were involved in this study. Moreover, the audio materials consist of the pseudo sentences that follow grammatical rules but lack any inherent meaning or emotional connotations. More details are provided by Supplementary Table 1. The sentences in English are cited completely from the research conducted by Paulmann and Uskul (2014), while the Mandarin sentences are translations of the English sentences. The Mandarin sentences were acted out by two individuals experienced in dubbing, with different emotions performed. The duration of both the English and Mandarin recordings ranged from 2000 ms to 3,000 ms. Post-processing was carried out on the Mandarin recordings, with volume adjustment made to ensure a standardized listening level for the participants during emotion recognition tasks. Each sound sample was saved as a separate .wav file with a frequency of 44,100 Hz, while monophonic 16-bit sampling was performed to maintain the consistency in sound quality.

In total, 140 English sentences and 160 Chinese sentences were selected and produced, followed by the assessment of them. To ensure emotional relevance, 40 native Chinese-speaking secondary school students participated in the assessment of audio materials. To avoid biased scoring, the order of the audio materials was randomized. The utterances with a recognition accuracy above 70% were used. A total of 80 recordings (40 in English and 40 in Mandarin) were finalized as the formal experimental materials. The specific recording materials for the formal experiment can be accessed via the following link: <https://github.com/chengshanshan123/Experimental-data>.

2.1.3 Design and procedure

Experiment 1 involved a 2 (language: Mandarin, English) \times 4 (emotion: anger, fear, happiness, sadness) within-subjects design, with the dependent variables as the emotion recognition accuracy and response time of the participants.

The experiment was conducted using a 16-inch laptop to present the stimuli through headphones. E-prime 2.0 software was applied for stimulus presentation and response time recording. The experimental environment was kept quiet. The participants performed an emotion recognition task with their eyes open throughout. They were instructed that it was not necessary to understand the audio content and their judgments should be based solely on the emotions conveyed in the sounds. Before the formal experiment began, the participants were required to familiarize themselves with the procedure and

response keystrokes through 8 practice trials. The practice phase had the same procedure and stimuli presentation as the formal experiment, with feedback received by the participants.

During the experiment, the participants were assigned specific keys (A, S, D, F) to correspond with different emotions (anger, fear, happiness, sadness). To control bias, these key-emotion mappings varied among the participants. The experiment consisted of two blocks, each with 40 trials. Thus, a total of 80 trials were involved. There was a 2-min break between the two blocks. Auditory stimuli were presented randomly, each of which lasted 3,000 ms and was played once. The participants were asked to select the corresponding emotion category by pressing a key after each sound. Once a choice was made, the program proceeded, with accuracy and response time recorded. The participants were instructed to prioritize accuracy in their responses. Figure 1A illustrates the process of stimulus presentation.

2.2 Results

A two-factor repeated measures ANOVA was conducted on the data (response time and accuracy) using SPSS 27.0 software to investigate the effects of language (Mandarin and English) and vocal emotion (anger, fear, happiness, and sadness). Post-hoc comparisons were performed in case of a significant main effect, followed by the analyses of significant interactions and subsequent simple effects. The Greenhouse–Geisser method was used to correct p -values, and partial eta-squared (η_p^2) was calculated to measure the effect size.

2.2.1 Accuracy rate (ACC)

The ACC results revealed a significant main effect of language [$F(1, 86) = 230.715, p < 0.01, \eta_p^2 = 0.728$]. Post-hoc analysis showed that participants' emotion recognition scores were significantly higher for Mandarin materials ($M = 0.857, SD = 0.010$) compared to English materials ($M = 0.704, SD = 0.010$), $p < 0.01$. The main effect of voice emotion categories was also significant [$F(3, 258) = 132.730, p < 0.01, \eta_p^2 = 0.607$]. Post-hoc analysis revealed that the highest recognition scores were for anger ($M = 0.889, SD = 0.014$) and happiness ($M = 0.858, SD = 0.014$), with no significant difference between them, $p > 0.05$. Sadness scored significantly lower than happiness and anger ($M = 0.787, SD = 0.014$), $p < 0.01$. Fear scored significantly lower than sadness ($M = 0.587, SD = 0.012$), $p < 0.01$. There was a significant interaction between language and emotion categories [$F(3, 258) = 53.026, p < 0.01, \eta_p^2 = 0.381$]. Simple effects analyses indicated that participants recognized Mandarin more accurately than English for all voice emotion categories, with significant differences for anger, fear, and sadness [$F(1, 86) = 33.418, p < 0.01, \eta_p^2 = 0.280$; $F(1, 86) = 326.304, p < 0.01, \eta_p^2 = 0.791$; $F(1, 86) = 21.183, p < 0.01, \eta_p^2 = 0.198$]. There was no significant difference in happiness, $p = 0.683$ (Figure 1B).

2.2.2 Response time (RT)

The RT results revealed a significant main effect of language [$F(1, 86) = 128.171, p < 0.01, \eta_p^2 = 0.598$]. Post-hoc analysis indicated that the response times for Mandarin ($M = 1074.054, SD = 47.761$) were significantly faster than for English ($M = 1530.409, SD = 60.827$), $p < 0.01$. There was also a significant main effect of emotion categories [$F(3, 258) = 35.376, p < 0.01, \eta_p^2 = 0.291$].

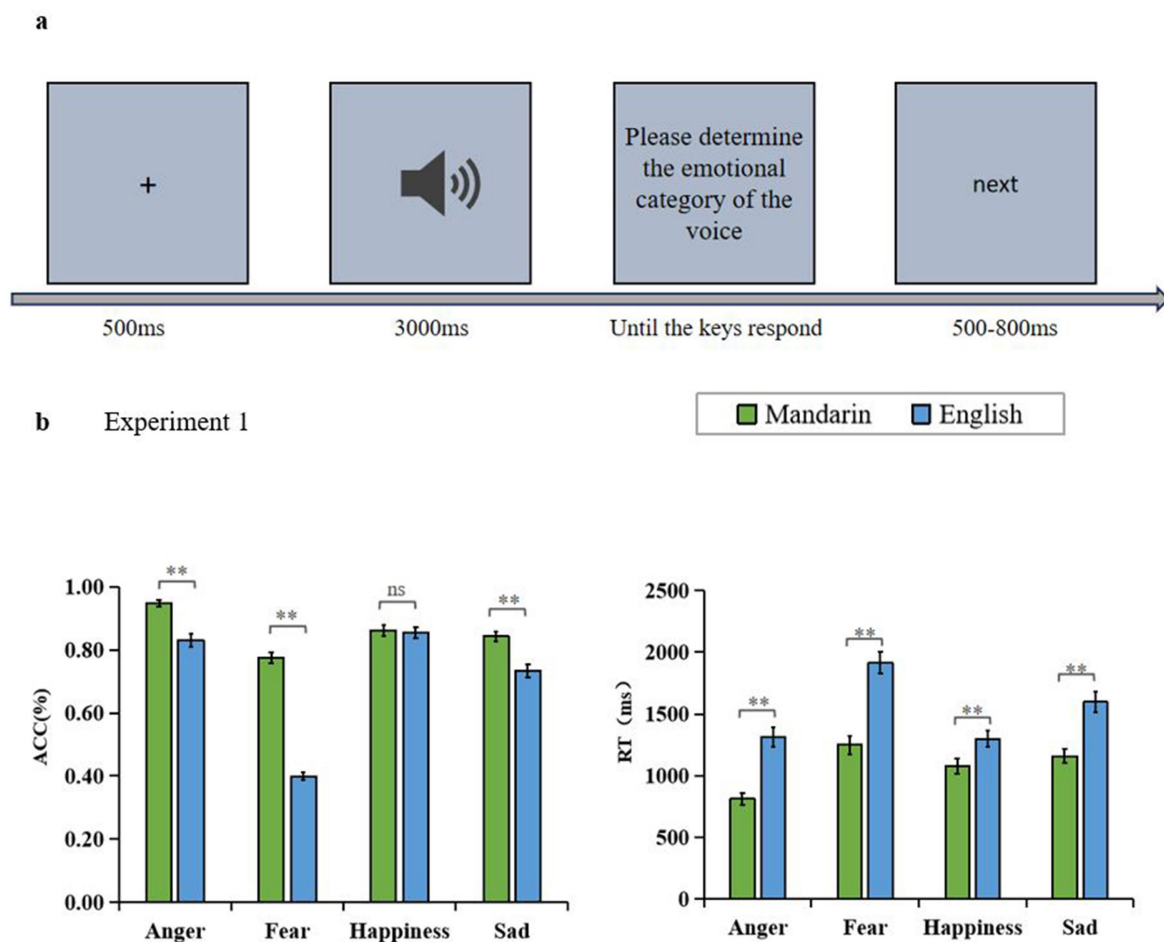


FIGURE 1

(A) The experimental procedure in Experiment 1, 2, 3. (B) Results of Experiment 1, accuracy rate and response time for cross-cultural voice emotion recognition in Mandarin-speaking adolescents.

Post-hoc analysis showed that anger was recognized as the fastest among different emotion categories ($M = 1061.178$, $SD = 53.253$), followed by happiness ($M = 1188.879$, $SD = 63.799$), and significantly slower for fear ($M = 1582.015$, $SD = 74.407$) and sadness ($M = 1376.854$, $SD = 58.422$), $p < 0.01$. Furthermore, there was a significant interaction between language and emotion categories [$F(3, 258) = 7.738$, $p < 0.01$, $\eta_p^2 = 0.083$]. Simple effects analyses showed that Mandarin was significantly faster than English when responding to each of the four voice emotion categories: anger $F(1, 86) = 61.141$, $p < 0.01$, $\eta_p^2 = 0.416$, fear $F(1, 86) = 94.982$, $p < 0.01$, $\eta_p^2 = 0.525$, happiness $F(1, 86) = 9.710$, $p < 0.01$, $\eta_p^2 = 0.101$, and sadness $F(1, 86) = 32.059$, $p < 0.01$, $\eta_p^2 = 0.272$ (Figure 1B).

2.3 Discussion

As indicated by the results of Experiment 1, compared with the recognition of emotions expressed in English, Mandarin-speaking adolescents possessed a significant advantage in identifying the vocal emotional expressions in Mandarin, including various emotions such

as anger, fear, happiness, and sadness. This advantage implies the potential challenges in processing cross-cultural emotional expressions. The differences in culture, pronunciation, and intonation may explain why it takes more cognitive effort and time to understand and distinguish emotions in English.

As revealed by Paulmann and Uskul (2014), Chinese adults were more adept at identifying emotions when expressed in Chinese compared to English. Yan et al. (2022) also found out that Mandarin-speaking adults recognized the emotions in Mandarin more accurately than in English. The present study on adolescents aligns with these previous findings on adults.

Based on the findings of Experiment 1, Experiment 2 was performed to establish whether there is an in-group advantage in recognizing emotions through vocal emotions among Mandarin adolescents and Shaoxing adolescents. Both groups share the same language family and national culture. Specifically, Experiments 2a and 2b were aimed at assessing the ability of these adolescents to recognize the emotions in Mandarin and other Chinese dialects (such as the Shaoxing dialect), respectively. This is conducive to determining whether the in-group advantage remains consistent across different regions of the same overarching culture.

3 Experiment 2: intra-cultural voice emotions recognition in adolescents

3.1 Methods

3.1.1 Materials

The English and Mandarin sentences used in Experiment 1 were repeated in this experiment. The Shaoxing dialect was recorded using the same set of sentences as those for the Mandarin recordings, but spoken in Shaoxing dialect. In total, 120 recordings (40 in English, 40 in Mandarin, and 40 in Shaoxing dialect) were finalized as the formal experimental materials. More details are provided by [Supplementary Table 1](https://github.com/chengshanshan123/Experimental-data) and the link: <https://github.com/chengshanshan123/Experimental-data>.

3.1.2 Design and procedure

Experiment 2 was carried out using a 3 (language: Mandarin, Shaoxing, English) \times 4 (emotion: anger, fear, happiness, sadness) within-subjects design, with accuracy and response time measured as dependent variables. The experimental procedure is the same as in Experiment 1.

3.2 Experiment 2a: emotional recognition of intra-cultural voices by Mandarin adolescents

3.2.1 Participants

The recruitment process for participants in Experiment 2a is identical to that of Experiment 1. All participants are native Mandarin speakers, coming from areas where Mandarin is the primary language spoken. A total of 44 middle school students (consisting of 19 boys and 25 girls, aged 13–15 years with an average age of 14 years) were recruited. Prior to the study, informed consent was obtained from both the participants and their parents. The experimental design was approved by the Shaoxing University Ethics Committee (No. 2023–060-01). More details of participant information and language proficiency are provided by [Supplementary Table 2](#).

3.2.2 Statistical analysis

Same as Experiment 1.

3.2.3 Results

3.2.3.1 Accuracy rate (ACC)

The ACC results revealed a significant main effect of language [$F(2, 86) = 89.742, p < 0.01, \eta_p^2 = 0.676$]. Post-hoc analysis showed that participants' emotion recognition scores for Mandarin ($M = 0.864, SD = 0.013$) were significantly higher than those for Shaoxing dialect ($M = 0.776, SD = 0.019$), and Shaoxing dialect scores were significantly higher than those for English ($M = 0.682, SD = 0.017$), $p < 0.01$. There was a significant main effect of emotion categories [$F(3, 129) = 34.533, p < 0.01, \eta_p^2 = 0.445$]. Post-hoc analysis showed that participants had the highest scores for recognizing the different emotion categories for anger ($M = 0.850, SD = 0.019$) and happiness ($M = 0.811, SD = 0.022$), and that there was no significant difference between the anger and happiness, $p > 0.05$, and scores significantly lower than anger were sadness ($M = 0.788, SD = 0.018$), $p < 0.01$ and fear ($M = 0.647, SD = 0.018$), $p < 0.01$. The interaction between language and emotion were significant [$F(6, 258) = 20.797, p < 0.01, \eta_p^2 = 0.326$]. Simple

effects analyses indicated that participants recognized anger, happiness, and sadness better in Mandarin than in Shaoxing, with a significant difference in anger and happiness, anger $F(2, 42) = 23.500, p < 0.01, \eta_p^2 = 0.528$; happiness $F(2, 42) = 26.599, p < 0.01, \eta_p^2 = 0.559$. There was no significant difference in fear ($p = 1.000$) and sadness ($p = 0.753$) ([Figure 2A](#)).

3.2.3.2 Response time (RT)

The RT results revealed a significant main effect of sound material language on response time [$F(2, 86) = 62.459, p < 0.01, \eta_p^2 = 0.592$]. Post-hoc analysis showed that the response times for Mandarin material ($M = 1124.673, SD = 73.790$) were significantly faster than for Shaoxing dialect ($M = 1524.657, SD = 80.229$), $p < 0.01$. Shaoxing dialect was significantly faster than English material ($M = 1672.741, SD = 87.073$), $p < 0.05$. There was a significant main effect of response time for emotion categories [$F(3, 129) = 10.754, p < 0.01, \eta_p^2 = 0.200$]. Post-hoc analysis showed that participants had the fastest response time for the different emotion categories recognized, with anger ($M = 1226.130, SD = 91.867$), and the next highest response time above anger was sadness ($M = 1424.939, SD = 63.849$), $p < 0.05$, and scoring significantly slower than anger were happiness ($M = 1539.316, SD = 84.947$) and fear ($M = 1572.377, SD = 98.020$), $p < 0.01$. There was a significant interaction between language and emotion [$F(6, 258) = 8.062, p < 0.01, \eta_p^2 = 0.158$]. Simple effects analyses indicated that Mandarin-speaking adolescents were faster than Shaoxing in recognition response time for all four emotions, with significant differences in anger and happiness, anger $F(2, 42) = 26.987, p < 0.01, \eta_p^2 = 0.562$, and happiness $F(2, 42) = 21.160, p < 0.01$. There was a significant difference in the interaction between fear ($p = 0.408$) and sadness ($p = 0.665$) the differences were not significant ([Figure 2A](#)).

3.3 Experiment 2b: emotional recognition of intra-cultural voices by Shaoxing adolescents

3.3.1 Participants

The recruitment process for participants in Experiment 2b was identical to that of Experiment 2a. The only difference is that all the participants are the native speakers of the Shaoxing dialect who come from the area where the Shaoxing dialect is commonly spoken. A total of 51 students (28 boys and 23 girls) were recruited, with an age range of 12–15 years and a mean age of 12.61 years. Informed consent was obtained from both the participants and their parents prior to the study. The experimental design was approved by the Shaoxing University Ethics Committee (no. 2023-060-01). [Supplementary Table 2](#) provides more details of participant information and language proficiency.

3.3.2 Statistical analysis

Same as experiment 2a.

3.3.3 Results

3.3.3.1 Accuracy rate (ACC)

The ACC results revealed a significant main effect of language [$F(2, 90) = 33.988, p < 0.01, \eta_p^2 = 0.430$]. Post-hoc analysis showed that emotion recognition scores for Mandarin material ($M = 0.839, SD = 0.016$) were significantly higher than those for Shaoxing dialect ($M = 0.764, SD = 0.021$), and Shaoxing dialect scores were significantly

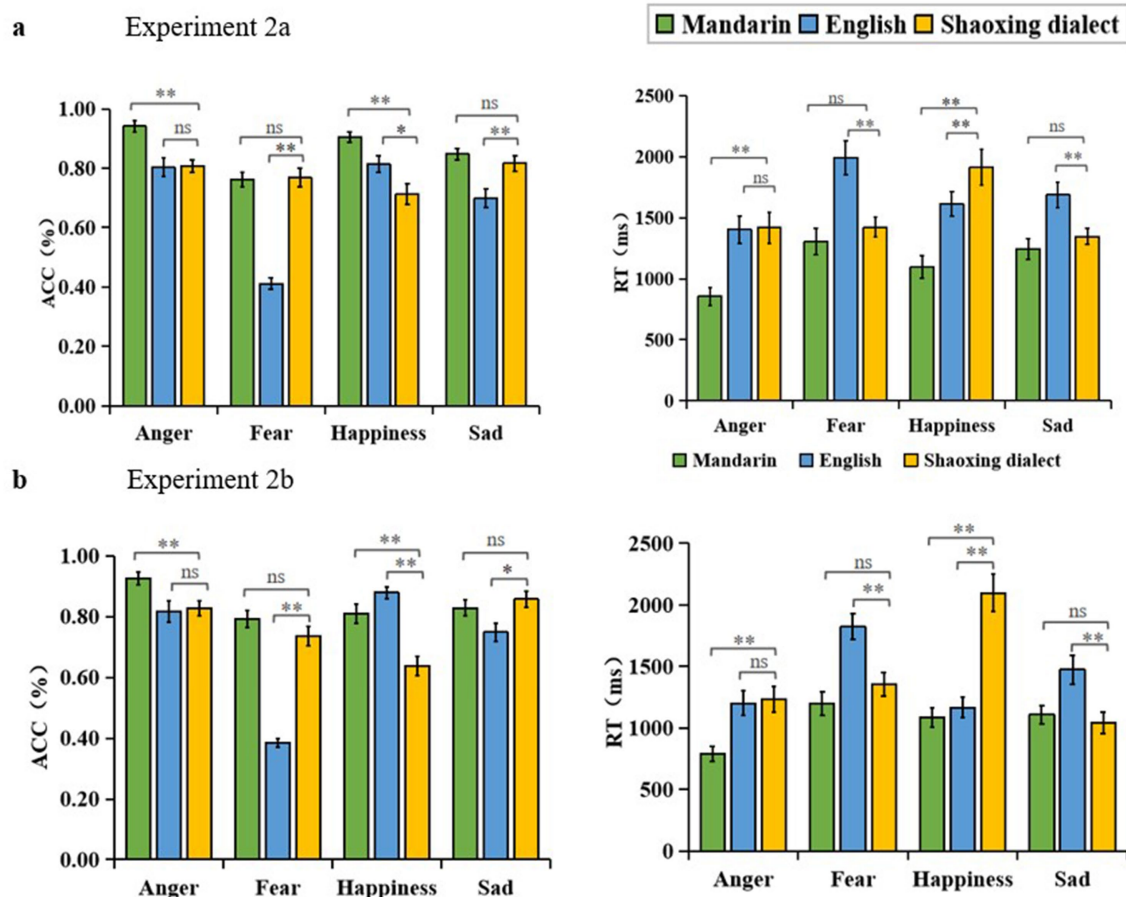


FIGURE 2

(A) Results from Experiment 2a, accuracy rates and response times of Mandarin-speaking adolescents' cross regional cultural voice emotion recognition. (B) Results of Experiment 2b, accuracy rate and reaction time of cross-cultural voice emotion recognition across regions for Shaoxing-speaking adolescents.

higher than those for English ($M = 0.707$, $SD = 0.015$), $p < 0.01$. The main effect of emotion categories was significant [$F(3, 135) = 38.193$, $p < 0.01$, $\eta_p^2 = 0.459$]. Post-hoc analysis showed that participants had the highest scores for anger ($M = 0.857$, $SD = 0.023$) and sadness ($M = 0.811$, $SD = 0.019$) in recognizing different emotion categories, which were not significantly different from each other, with $p > 0.05$. Scores significantly lower than anger and sadness was fear ($M = 0.638$, $SD = 0.013$), $p < 0.01$. Happiness ($M = 0.775$, $SD = 0.018$) was significantly lower than anger, $p < 0.01$, and significantly higher than fear, $p < 0.01$. The interaction between language and emotion categories was significant [$F(6, 270) = 33.470$, $p < 0.01$, $\eta_p^2 = 0.427$]. Simple effects analyses showed that Shaoxing-speaking adolescents recognized Mandarin more than Shaoxing dialect on anger, fear, and happiness, with significant differences on anger and happiness, anger $F(2, 44) = 11.200$, $p < 0.01$, $\eta_p^2 = 0.337$; happiness $F(2, 44) = 26.116$, $p < 0.01$, $\eta_p^2 = 0.543$. The difference was not significant on fear ($p = 0.147$) and sadness ($p = 1.000$) (Figure 2B).

3.3.3.2 Response time (RT)

The RT results revealed a significant main effect of sound material language on response time [$F(2, 180) = 52.576$, $p < 0.01$, $\eta_p^2 = 0.369$]. Post-hoc analysis showed that the response times for Mandarin material ($M = 1140.554$, $SD = 48.926$) were significantly lower than

for Shaoxing dialect ($M = 1610.973$, $SD = 79.440$), $p < 0.01$. There was no difference between Shaoxing and English materials ($M = 1608.134$, $SD = 71.044$), $p > 0.05$. The main effect of emotion categories on response time was significant. Emotions had a significant main effect [$F(3, 270) = 25.957$, $p < 0.01$, $\eta_p^2 = 0.224$]. Post-hoc analysis showed that participants had the lowest response times for anger ($M = 1188.429$, $SD = 61.143$), and significantly slower than anger were fear ($M = 1679.586$, $SD = 77.510$) and happiness ($M = 1581.465$, $SD = 75.186$), followed by sadness ($M = 1363.403$, $SD = 69.549$), $p < 0.05$. The interaction between voice material language and voice emotion categories was significant [$F(6, 540) = 30.259$, $p < 0.01$, $\eta_p^2 = 0.252$]. Simple effects analyses showed that on the anger, fear, and happiness, Shaoxing-speaking middle school students responded to Mandarin recognition tasks more quickly than they did to tasks in the Shaoxing dialect, with significant differences on anger and happiness, anger $F(2, 44) = 16.840$, $p < 0.01$, $\eta_p^2 = 0.434$; and happiness $F(2, 44) = 21.407$, $p < 0.01$, $\eta_p^2 = 0.493$. The difference for fear ($p = 0.270$) and sadness ($p = 1.000$) the difference was not significant (Figure 2B).

3.3.3.3 Mandarin and Shaoxing participants comparison in Experiment 2

As for the results of ACC, a repeated measures ANOVA was conducted on Experiments 2a and 2b with participant group, language

and emotion categories as independent variables and accuracy as the dependent variable. The analysis revealed, the main effect of group is insignificant [$F(1, 88) = 0.036, p = 0.850$, and $\eta_p^2 = 0.990$].

As for the results of RT, a repeated measures ANOVA was conducted on Experiments 2a and 2b with participant group, language and emotion categories as independent variables and response time as the dependent variable. The analysis indicated, the main effect of group is insignificant [$F(1, 88) = 1.590, p = 0.215$, and $\eta_p^2 = 0.017$].

3.4 Discussion

In Experiment 2, the emotional voices in the Shaoxing dialect were used to explore how Mandarin-speaking adolescents and Shaoxing-speaking adolescents perceive vocal emotions in various regions within a single country. This research aims to determine if there is an in-group advantage within a large and unified culture.

As observed in Experiment 2a, Mandarin-speaking adolescents demonstrated a significantly better ability to identify vocal emotions in Mandarin than in Shaoxing and English. This finding supports the hypothesis proposed in the experiment, confirming the prediction of the in-group advantage that individuals are adept at recognizing emotional expressions within their own cultural or linguistic group. Additionally, it took more time for the participants to identify the emotional sounds in English than in Shaoxing dialect. This finding aligns with the research conducted by Laukka and Elfenbein (2021), which indicates that the more pronounced in-group advantage is often attributed to a wider cultural gap between languages. This is because individuals are more familiar with the cultural connotations and emotional expressions within their own cultural-linguistic group. Additionally, a greater difference from other languages renders this familiarity advantage more prominent in the process of emotional recognition.

The results of Experiment 2b are inconsistent with our prediction. It was found out that Shaoxing-speaking adolescents exhibited a degree of advantage in recognizing Mandarin emotions compared to Shaoxing emotions. This might result from the fact that Mandarin is commonly used in educational and daily situations. There are many studies demonstrating the positive impact of language exposure on emotion recognition (Schwering et al., 2021; Barrett et al., 2007). Schwering et al. (2021) emphasized the exposure to new reading materials and the capacity to recognize emotions, revealing how linguistic experiences play a crucial role in the development of emotional comprehension. Although Mandarin and Shaoxing dialect are both part of the same culture, there are still variations in their linguistic structures and usage patterns. People who speak the Shaoxing dialect may use Mandarin more frequently for communication. As indicated by this difference, the amount and type of language exposure can directly affect one's ability to recognize emotions, rather than just their linguistic or cultural background. In conclusion, the regular exposure to Mandarin has a potential in allowing Shaoxing adolescents to better understand and interpret the emotions expressed in Mandarin, even though Shaoxing dialect is their native dialect.

In Experiment 2, the adolescents from Shaoxing failed to show an in-group advantage, which may be due to Mandarin is already widely spoken throughout the Shaoxing region. Therefore, our aim is to find a region that is less influenced by Mandarin. Consequently, in

Experiment 3, Tibetan was used, as Tibetan and Mandarin belong to the same language family. Therefore, it can be investigated whether the in-group advantage effect is observable within the same country. Also, it can be ascertained whether the in-group advantage exists across different regions of the same overarching culture.

4 Experiment 3: voice emotions recognition for adolescents to expand the cultural distance

4.1 Methods

4.1.1 Materials

The English and Mandarin sentences from Experiment 1 were also used in this experiment. Tibetan dialect recordings used the same set of sentences as the Mandarin recordings. The Tibetan sentences were spoken by two native speakers of the Tibetan dialect. In total, 120 recordings (40 in English, 40 in Mandarin, and 40 in Tibetan dialect) were selected as the formal experimental materials. More details are provided by Supplementary Table 1 and the link: <https://github.com/chengshanshan123/Experimental-data>.

4.1.2 Design and procedure

Experiment 3 was performing using a 3 (language: Mandarin, Tibetan, English) \times 4 (emotion: anger, fear, happiness, sadness) within-subjects design, with accuracy and response time as dependent variables. The same experimental procedure as in Experiment 2 was adopted. In Experiment 3, the regional variation was extended by substituting the Shaoxing dialect with Tibetan to explore the differences in vocal emotion recognition among adolescents.

4.2 Experiment 3a: voice emotion recognition of Mandarin adolescents: an expansion of cultural distance

4.2.1 Participants

The recruitment process for participants in Experiment 3a was identical to that of Experiment 2. All the participants are native Mandarin speakers with no proficiency in Tibetan. A total of 51 middle school adolescents (consisting of 28 boys and 23 girls, aged 12–15 years with an average age of 12.61 years) were recruited for this experiment. Prior to the study, informed consent was obtained from both participants and their parents. The experimental design was approved by the Shaoxing University Ethics Committee (no. 2023-060-01). The Supplementary Tables 1, 2 provide additional details on participant information and language proficiency.

4.2.2 Statistical analysis

Same as Experiment 2.

4.2.3 Results

4.2.3.1 Accuracy rate (ACC)

The ACC results revealed a significant main effect of language [$F(2, 100) = 354.067, p < 0.01, \eta_p^2 = 0.876$]. Post-hoc analysis showed that emotion recognition scores for Mandarin material

($M = 0.807$, $SD = 0.016$) were significantly higher than those for Tibetan ($M = 0.396$, $SD = 0.014$) and English ($M = 0.671$, $SD = 0.014$), $p < 0.01$. The main effect of emotion categories was significant [$F(3, 150) = 40.201$, $p < 0.01$, $\eta_p^2 = 0.446$]. Post-hoc analysis showed that participants scored the highest on the recognition of different emotion categories for happiness ($M = 0.712$, $SD = 0.021$), and lower than happiness was anger ($M = 0.673$, $SD = 0.014$) no significant difference. Scoring significantly lower than happiness were sadness ($M = 0.642$, $SD = 0.013$), $p < 0.01$, and fear ($M = 0.438$, $SD = 0.011$), $p < 0.01$. The interaction between language and emotion categories was significant [$F(6, 300) = 15.949$, $p < 0.01$, $\eta_p^2 = 0.242$]. Simple effects analyses showed that the participants recognized Mandarin better than Tibetan on all four voice emotion categories, anger $F(2, 49) = 269.675$, $p < 0.01$, $\eta_p^2 = 0.917$; fear $F(2, 49) = 31.880$, $p < 0.01$, $\eta_p^2 = 0.565$; and happiness $F(2, 49) = 58.898$, $p < 0.01$, $\eta_p^2 = 0.706$; sadness $F(2, 49) = 37.965$, $p < 0.01$, $\eta_p^2 = 0.608$ (Figure 3A).

4.2.3.2 Response time (RT)

The RT results revealed a significant main effect of language [$F(2, 100) = 59.324$, $p < 0.01$, $\eta_p^2 = 0.543$]. Post-hoc analysis showed that

emotion recognition for Mandarin ($M = 1306.879$, $SD = 79.333$) was significantly faster than English ($M = 1833.023$, $SD = 136.131$), and English was significantly faster than Tibetan ($M = 2897.835$, $SD = 218.076$), $p < 0.01$. There was a significant main effect of emotion categories [$F(3, 150) = 8.839$, $p < 0.01$, $\eta_p^2 = 0.150$]. Post-hoc analysis revealed that, among the different recognized emotion categories, participants responded fastest to anger ($M = 1785.708$, $SD = 132.560$). Fear ($M = 2342.976$, $SD = 155.724$) elicited a significantly slower response than anger ($p < 0.01$). Sadness ($M = 2017.643$, $SD = 152.637$) and happiness ($M = 1807.351$, $SD = 93.830$) did not show significant differences from anger ($p > 0.05$). Happiness was significantly faster than fear ($M = 2342.976$, $SD = 155.724$) ($p < 0.01$). Sadness was significantly faster than fear ($p < 0.05$) and did not have significant differences compared to other emotions. There was a significant interaction between language and emotion categories [$F(6, 300) = 10.331$, $p < 0.01$, $\eta_p^2 = 0.072$]. Simple effects analyses showed that participants were significantly faster for Mandarin than for Tibetan for all four voice emotions: anger $F(2, 49) = 47.494$, $p < 0.01$, $\eta_p^2 = 0.660$; fear $F(2, 49) = 26.585$, $p < 0.01$, $\eta_p^2 = 0.520$; happiness $F(2, 49) = 22.554$, $p < 0.01$, $\eta_p^2 = 0.479$; sadness $F(2, 49) = 17.231$, $p < 0.01$, $\eta_p^2 = 0.413$ (Figure 3A).

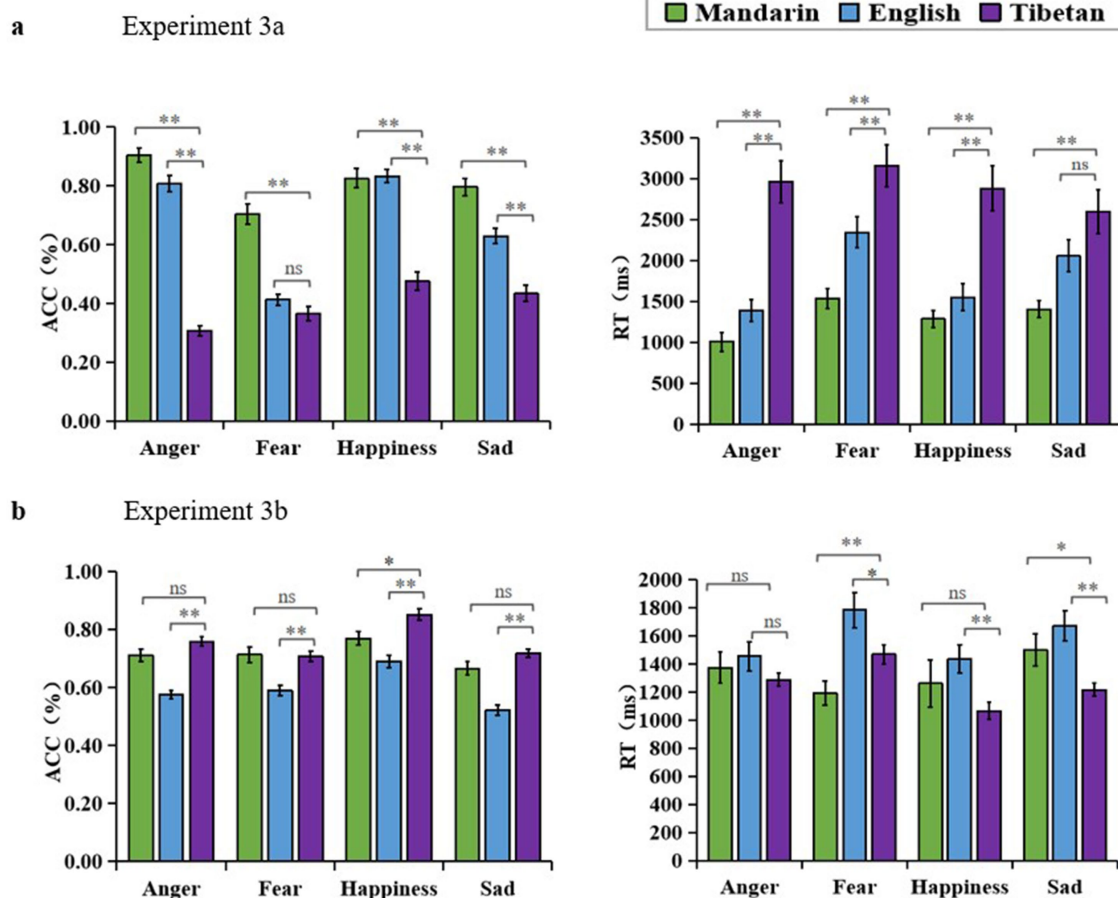


FIGURE 3

(A) Experiment 3a results, accuracy rate and response time of extended regional distance sound emotion recognition in Mandarin-speaking adolescents. (B) Experiment 3b results, accuracy rate and response time of Tibetan-speaking adolescents expanded regional distance voice emotion recognition.

4.3 Experiment 3b: voice emotions recognition for Tibetan-speaking adolescents: an expansion of cultural distance

4.3.1 Participants

The recruitment process for participants in Experiment 3b was identical to that of Experiment 3a. The only difference is that all of the participants are native speakers of the Tibetan and come from Tibet. Although their Mandarin and English vocabulary is limited, they cannot communicate effectively. A total of 68 students (37 boys and 31 girls) were recruited, with an age range of 14.1 years and a mean age of 12.61 years. Before the study, informed consent was obtained from both participants and their parents. The experimental design was approved by the Shaoxing University Ethics Committee (No. 2023-060-01).

4.3.2 Statistical analysis

Same as Experiment 3a.

4.3.3 Results

4.3.3.1 Accuracy rate (ACC)

The ACC results revealed a significant main effect of language [$F(2, 134) = 36.813, p < 0.01, \eta_p^2 = 0.355$]. Post-hoc analysis showed that emotion recognition scores for Tibetan ($M = 0.759, SD = 0.012$) were significantly higher than those for English ($M = 0.594, SD = 0.011$), $p < 0.01$, and higher than those for Mandarin ($M = 0.715, SD = 0.020$), and scores for Mandarin were significantly higher than those for English, $p < 0.01$. The main effect of emotion categories was significant [$F(3, 201) = 43.080, p < 0.01, \eta_p^2 = 0.391$]. Post-hoc analysis showed that participants scored the highest on the recognition of different emotion categories, happiness ($M = 0.770, SD = 0.015$), and lower than happiness were anger ($M = 0.681, SD = 0.010$), $p < 0.01$, fear ($M = 0.670, SD = 0.013$), $p < 0.01$, and finally sadness ($M = 0.635, SD = 0.010$), $p < 0.01$. The interaction between voice material language and voice emotion categories was significant [$F(6, 402) = 43.184, p < 0.01, \eta_p^2 = 0.045$]. Simple effects indicated that Tibetan-speaking adolescents recognized Tibetan more than Mandarin for all the anger, happiness, and sadness emotion categories, with a significant difference for happiness [$F(2, 66) = 29.855, p < 0.01, \eta_p^2 = 0.475$]. the difference was not significant on anger ($p = 0.221$), fear ($p = 1.000$) and sadness ($p = 0.299$). The difference was not significant on sadness ($p = 0.299$). Recognition of Mandarin was significantly higher than English on all four emotion categories, anger $F(2, 66) = 45.403, p < 0.01, \eta_p^2 = 0.577$; fear $F(2, 66) = 28.295, p < 0.01, \eta_p^2 = 0.462$; happiness $F(2, 66) = 29.855, p < 0.01, \eta_p^2 = 0.475$; sadness $F(2, 66) = 42.748, p < 0.01, \eta_p^2 = 0.564$ (Figure 3B).

4.3.3.2 Response time (RT)

The RT results revealed a significant main effect of language [$F(2, 134) = 14.767, p < 0.01, \eta_p^2 = 0.181$]. Post-hoc test showed that emotion recognition for Tibetan material ($M = 1258.791, SD = 41.926$) was significantly faster than English ($M = 1586.865, SD = 78.401$), $p < 0.01$, and faster than Mandarin ($M = 1331.490, SD = 80.373$), as well as significantly faster when responding in Mandarin than in English, $p < 0.01$. There was a significant main effect of emotion categories [$F(3, 201) = 5.575, p < 0.01, \eta_p^2 = 0.077$]. Post-hoc analysis

showed that participants were fastest when responding to happiness ($M = 1254.418, SD = 74.273$) for the different emotion categories recognized. Fear ($M = 1481.293, SD = 67.023$) was slower than happiness, $p < 0.01$, followed by sadness ($M = 1462.454, SD = 69.767$), $p < 0.05$. Anger ($M = 1371.363, SD = 65.362$) was not significantly different from happiness. There was a significant interaction between voice material language and voice emotion categories [$F(6, 402) = 4.179, p < 0.01, \eta_p^2 = 0.059$]. Simple effects analyses showed that Tibetan was faster than Mandarin when responding to anger, fear, happiness, and sadness, with a significant difference on anger and sadness, fear $F(2, 66) = 9.676, p < 0.01, \eta_p^2 = 0.227$; sadness $F(2, 66) = 9.115, p < 0.05, \eta_p^2 = 0.216$. There were no significant differences in response times for anger ($p = 0.222$) and happiness ($p = 0.170$). Mandarin was faster than English when responding on all four emotion categories, with a significant difference on fear, fear $F(2, 66) = 9.676, p < 0.01, \eta_p^2 = 0.227$. There was no significant difference in anger ($p = 1.000$) and happiness ($p = 0.387$) and sadness ($p = 0.354$) (Figure 3B).

4.3.3.3 Mandarin and Tibetan participants comparison in experiment 3

Regarding the results of ACC, a repeated measures ANOVA was conducted on Experiments 3a and 3b with participant group, language and emotion categories as independent variables and accuracy as the dependent variable. As indicated by the results, the main effect of group was significant [$F(1, 117) = 20.303, p < 0.01, \eta_p^2 = 0.148$]. According to post-hoc analysis, the emotion recognition scores for Tibetan-speaking adolescents ($M = 0.689, SD = 0.011$) were significantly higher than those for Mandarin adolescents ($M = 0.625, SD = 0.009$), and $p < 0.01$. The interaction between group and voice material language reached a significant extent [$F(2, 116) = 177.262, p < 0.01, \eta_p^2 = 0.753$]. As indicated by simple effects analyses, the Mandarin-speaking adolescents scored ($M = 0.807, SD = 0.020$) significantly higher than the Tibetan-speaking adolescents ($M = 0.715, SD = 0.017$), and $p < 0.01$ for Mandarin. For Tibetan, the Tibetan-speaking adolescents scored significantly higher ($M = 0.759, SD = 0.011$) than the Mandarin-speaking adolescents ($M = 0.396, SD = 0.013$), $p < 0.01$.

As for the results of RT, a repeated measures ANOVA was conducted on Experiment 3a and 3b with participant group, language and emotion categories as independent variables and RT as the dependent variable. According to the results, the main effect of group was significant [$F(1, 116) = 669.700, p < 0.01, \eta_p^2 = 0.852$]. Post-hoc analysis revealed that the emotion recognition scores for Tibetan-speaking adolescents ($M = 1380.275, SD = 86.192$) were significantly faster than those for Mandarin adolescents ($M = 2012.579, SD = 98.792$), and $p < 0.01$. The interaction between group and language was significant [$F(2, 115) = 52.717, p < 0.01, \eta_p^2 = 0.478$]. As indicated by simple effects analyses, for Tibetan, the Tibetan-speaking adolescents scored significantly faster ($M = 0.1253.213, SD = 128.902$) than the Mandarin-speaking adolescents ($M = 2897.835, SD = 147.745$), and $p < 0.01$.

4.4 Discussion

Experiment 3a is purposed to investigate how well Mandarin adolescents perform in identifying the vocal emotions in Mandarin,

English, and Tibetan. These languages represent different regional cultures within a single nation. The study revealed that Mandarin-speaking adolescents, who did not know Tibetan, exhibited a clear advantage for their own in-group. This is consistent with prior research findings that cultural familiarity influences emotion recognition (Matsumoto and Hwang, 2013). Additionally, the results showed that the adolescents had a greater facility with English, which resulted from educational exposure and media influence.

As revealed by Experiment 3b, compared to Mandarin and English, Tibetan-speaking adolescents exhibited significantly higher recognition rates for vocal emotions in their native language. These findings confirm the presence of an in-group advantage. Growing up within the Tibetan cultural environment, Tibetan-speaking adolescents used Tibetan as their main language for daily communication. Due to this exposure, they become adept at emotional expressions in Tibetan. However, Tibetan-speaking adolescents are relatively weak in recognizing emotional expressions in English, which is attributed to the minimal exposure to English in their cultural and educational surroundings.

5 General discussion

In this study, three experiments were conducted to explore how the adolescents from various regions in China perceive voice emotions, involving Mandarin, English, Shaoxing dialect, and Tibetan languages. Experiment 1 confirmed that adolescents exhibited an in-group advantage in cross-cultural voice emotions recognition. In Experiment 2, it was further confirmed that this in-group advantage was possessed by Mandarin-speaking adolescents as well. However, Shaoxing-speaking adolescents showed an in-group advantage in cross-cultural speech emotion recognition compared to English, but this advantage disappeared when compared to Mandarin. That is to say, they failed to perform better in recognizing emotions in Mandarin than in Shaoxing. Finally, it was verified through Experiment 3 that both Mandarin-speaking adolescents and Tibetan-speaking adolescents possessed an in-group advantage in cross-cultural voice emotion recognition. Despite limited research on how adolescents recognize vocal emotions, our study has demonstrated that they have the same ability to recognize cross-cultural vocal emotions as adults (Paulmann and Uskul, 2014; Laukka et al., 2013, 2016; Chronaki et al., 2018).

As indicated by research, it is possible for the individuals learning a second language to encounter challenges in accurately identifying emotions conveyed in non-native vocal cues (Graham et al., 2001; MacIntyre and Vincze, 2017). This is due to the substantial cultural disparities in emotional expressions, phonological attributes, and intonation between English and Mandarin. Despite the exposure to English through education and media, Mandarin-speaking adolescents still lack immersion in an all-English environment. This hinders them from developing their English emotion-recognition skills during language instruction. As a result, they still lack familiarity with English-speaking cultural norms in emotional expression.

As observed in Experiment 2a, Mandarin-speaking adolescents were superior in the recognition of vocal emotions in Mandarin relative to the Shaoxing dialect. However, Experiment 2b showed that Shaoxing-speaking adolescents performed better in recognizing emotions in Mandarin. This results from the widespread use of

Mandarin in education. As the official language of China, Mandarin is used in various aspects of life such as education, media, and social interactions. Shaoxing-speaking adolescents, starting to learn Mandarin from a young age, are frequently exposed to the language, which improves their familiarity with emotional expressions in Mandarin (Feng and Adamson, 2012). Additionally, adolescents can develop cognitive patterns for Mandarin as they are at a stage of cognitive development where they are more receptive to new information (Yang and Kong, 2023). In contrast, the Shaoxing dialect is used less frequently in daily life, especially in formal settings, as a result of which their cognitive abilities for that dialect are weaker. Their understanding of emotional expressions in Mandarin is further strengthened by the exposure to Mandarin through literature, films, and television.

It was discovered that the recognition rate of happiness emotions in English among Shaoxing-speaking adolescents was also higher than that in the Shaoxing dialect. It is speculated that there are three possible reasons for this. Firstly, Shaoxing youth begin the exposure to English learning as early as kindergarten. During this time, teachers typically engage students by playing cheerful English nursery rhymes, among other methods. In this way, students can experience the joy conveyed in English, which enhances their ability to recognize happiness emotions in the language (Ambarini, 2012). Secondly, the content of English courses often features the stories and dialogs that express happiness in English. Thus, students are repeatedly exposed to such expressions throughout their learning process, which improves their recognition rate (Ambarini, 2012). Finally, there are often the requirements related to happiness emotions in their course assignments. For instance, adolescents may be asked to watch English comedy films and share their feelings. Because of this direct exposure to the humorous and joyful expressions in English, they are intuitively familiarized with such emotional expressions, which increases their recognition rate for these emotions (Li et al., 2024).

In Experiment 3b, Tibetan-speaking adolescents exhibited a significant in-group advantage for sound emotion recognition. The recognition of all four sound emotions in Tibetan was found higher than that in Mandarin, and their response time was found faster than that in Mandarin. Tibetan-speaking adolescents have been living in Tibet since birth. Immersed in a Tibetan language environment, they communicate in Tibetan with their family members and classmates around them all the time. Also, they have mastered the expression and recognition of various emotions. Even under the policy of popularizing Mandarin, Tibetan was still retained and taught as a subject of study, further reinforcing students' mastery of the Tibetan language. This resulted in a significant improvement in recognition accuracy for Tibetan compared to Mandarin. Tibetan-speaking adolescents also demonstrated an in-group advantage in recognizing Mandarin and English, with their recognition of Mandarin being superior to that of English. As Mandarin was popularized, they were exposed to and learned it earlier than English. Additionally, Mandarin was used various mainstream media, thus increasing their exposure to the language in learning and entertainment. As for English, which is also one of the participants studied, Tibetan-speaking adolescents may lack sufficient exposure and practice due to limited resources and opportunities. The consequence of this is their lower performance in recognizing emotions in English sounds.

Different dialect groups show variations in the accuracy of recognizing different categories of vocal emotions. For Mandarin-speaking adolescents, the order of recognition accuracy from high to

low is as follows: anger > happiness > sadness > fear. For Shaoxing dialect-speaking adolescents, it is: anger > sadness > happiness > fear. For Tibetan-speaking adolescents, it is: happiness > anger > fear > sadness.

There are several limitations to our study. Firstly, only two dialects, Shaoxing and Tibetan, were selected for analysis. Due to historical and geographical influences, the Sino-Tibetan language family has evolved over time, resulting in a wide variety of dialects across different regions. Chinese dialects are typically categorized into 10 major groups, each of which can be further subdivided into the dialects specific to various areas. Additionally, this study focused narrowly on four basic emotions, despite many other social emotions that can be explored in the future. Furthermore, the participants in this study were limited to junior high school students. Therefore, senior high school adolescents should be included in future studies to better understand the emotions in Chinese adolescents' voices across different regions and cultures. Lastly, the present study was conducted using the recognition accuracy metric rather than the unbiased hit rates (HU scores) as proposed by Wagner (1993). To a certain extent, this methodology has the potential to cause bias in the obtained results. In future research, more precise indicators will be used to explore the voice emotion recognition ability of adolescents, in order to improve the accuracy and reliability of the findings.

6 Conclusion

Chinese adolescents were more proficient in identifying vocal emotions from their own cultural group, as opposed to other regional cultures. This advantage was found more pronounced as the cultural distinctions between groups became more significant.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found in the article/[Supplementary material](#).

Ethics statement

The studies involving humans were approved by Shaoxing University Affiliated Hospital Medical Ethics Committee. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

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SC: Data curation, Formal analysis, Investigation, Methodology, Software, Writing – original draft. YL: Data curation, Formal analysis, Methodology, Writing – review & editing. YW: Data curation, Formal analysis, Methodology, Writing – review & editing. YZ: Funding acquisition, Methodology, Software, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2024.1437701/full#supplementary-material>

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Integrating emotional vocabulary in EFL education: a model for enhancing emotional intelligence in pre-service EFL teachers

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This study investigates the role of emotional vocabulary in fostering emotional intelligence (EI) among pre-service EFL teachers, focusing on the Headway series. The general objective was to quantify, categorize, and classify emotion vocabulary across proficiency levels and to develop a systematic teaching model to enhance EI in pre-service teachers. A mixed-methods approach was employed: quantitative analysis identified and categorized emotional vocabulary using established lexicons, and qualitative thematic analysis aligned this vocabulary with key EI components such as self-awareness, emotional regulation, and empathy. To develop the systematic teaching model, a design-based research methodology was utilized, incorporating iterative refinement based on empirical findings and expert feedback. Grounded in Goleman's Emotional Intelligence Theory, the study revealed a progressive increase in emotional vocabulary, with more complex emotions introduced at advanced levels. Positive emotions were more frequent at beginner levels, while negative and neutral emotions increased at higher stages, supporting self-regulation and empathy development. The systematic teaching model proposed in the study addresses key EI components such as self-awareness, social skills, and emotional regulation by scaffolding emotional vocabulary instruction across proficiency levels. This model provides a structured framework to equip educators with the emotional and linguistic tools necessary for effective classroom management and enhanced student outcomes. This research holds pedagogical implications for teacher training programs, recommending that emotional vocabulary and EI be integrated into pre-service education to improve classroom management and student outcomes.

KEYWORDS

emotional intelligence, emotional vocabulary, pre-service EFL teachers, systematic teaching model, socio-emotional learning

Introduction

Socio-emotional development in higher education and teacher training is essential for effective teaching and learning, encompassing emotional intelligence (EI), social skills, and stress management. Integrating socio-emotional learning (SEL) into curricula helps educators address classroom challenges and foster inclusive environments. Teachers with strong socio-emotional skills improve classroom dynamics, job satisfaction, and student outcomes, including mental health and academic success (Molina-Moreno et al., 2024; Shankland et al., 2024). A holistic approach combining emotional and cognitive competencies enhances student well-being and future success (Indellicato, 2024). Implementation requires aligning practices

with theories like Goleman's, focusing on empathy and stress management, and using robust evaluation models (Calderón Calderón, 2024). Resistance to change in traditional models highlights the need for a pedagogical shift to integrate emotional and cognitive processes (Indellicato, 2024). Despite challenges, SEL offers transformative opportunities for education (Shankland et al., 2024).

The significance of emotion vocabulary in EFL (English as a Foreign Language) textbooks has gained recognition in recent years, as it plays a crucial role in enabling learners to communicate effectively and develop sociopragmatic competence, which is essential for navigating social interactions. Despite this, emotion vocabulary remains underrepresented in many EFL textbooks, leaving learners ill-prepared to express emotions in a foreign language (Dewaele, 2015). Some of the progress highlighted include improvements in the incorporation of emotion vocabulary in certain textbooks (Sánchez and Pérez-García, 2020), yet a significant gap persists. This deficiency is concerning, as research shows that exposure to emotion-laden words and texts can positively influence vocabulary acquisition and retention, with neutral and negative emotion-laden texts predicting better learning outcomes than positive texts (Driver, 2022). Furthermore, teachers themselves often have a limited emotional vocabulary, which can hinder their ability to support students' development of a robust emotional lexicon (Alzina and Guiu, 2018). Addressing the emotional vocabulary gap in EFL textbooks and instruction is essential for enhancing learners' language skills and helping them use language in socially and emotionally appropriate ways.

Emotional intelligence (EI) plays a crucial role in enhancing language learning, particularly for pre-service EFL teachers, as it significantly contributes to teacher effectiveness, student achievement, and classroom management (Coombe et al., 2020). Research shows a positive relationship between teachers' EI and students' language achievement (Al Jaber et al., 2024), and EI can be developed through reflective practices such as journaling and classroom discussions, which help teachers build self-awareness and emotional regulation (Zadorozhna et al., 2018). For pre-service teachers, EI awareness impacts their teaching experiences and efficacy (Dick-Burszty, 2023; Koçoğlu, 2011). Incorporating EI training in EFL education fosters emotional awareness and communication skills, enhancing students' language competence (Balasubramanian and Al-Mahrooqi, 2016). Furthermore, explicit instruction in emotion vocabulary plays a vital role in improving pre-service teachers' emotional awareness and communication abilities, as emotion-laden texts have been shown to aid in vocabulary retention and comprehension, especially when neutral or negative emotional contexts are involved (Driver, 2022). Therefore, integrating EI instruction in EFL teacher training programs is essential to promote emotional awareness, improve teaching effectiveness, and support classroom dynamics (Alrefaai and Shah, 2020).

Fostering emotional intelligence (EI) in pre-service Chilean EFL teachers is increasingly recognized as a critical element for effective teaching, teacher well-being, and classroom management. EI, which encompasses the ability to recognize, understand, and manage one's emotions and the emotions of others, is essential for teachers to navigate the emotional complexities of the classroom and maintain high levels of job performance and satisfaction (Extremera and Fernández-Berrocal, 2004). In Chile, as in many other countries, teachers face stressful environments, making EI crucial for preventing burnout and

promoting resilience. Research indicates that teachers with higher EI levels are more effective in managing stress, improving student outcomes, and fostering positive classroom environments (Vesely-Maillefer and Saklofske, 2018). However, despite its importance, EI is often underdeveloped in Chilean pre-service teacher training programs, limiting the ability of new educators to manage their emotional well-being and engage effectively with students (Valenzuela-Zambrano et al., 2021). Many Chilean teachers perceive themselves as having low levels of EI, which can hinder their ability to manage classroom dynamics and cope with the emotional demands of the profession (Valenzuela-Zambrano et al., 2021). This self-perception is linked to the inadequate integration of EI training in teacher education programs (Muñoz, 2022). Without comprehensive EI training, pre-service teachers enter the workforce without the emotional tools needed to manage stress, avoid burnout, and foster positive relationships with students and colleagues. This lack of emotional preparedness contributes to lower job satisfaction, increased teacher turnover, and diminished classroom effectiveness (Delgado-Bello et al., 2021).

While the significance of emotional vocabulary in EFL education is increasingly acknowledged, prior research has several limitations that hinder its practical application. For instance, studies often focus on the presence of emotional vocabulary in textbooks without critically analyzing its pedagogical implications or its alignment with emotional intelligence development (Kang, 2022; Thuy, 2024). Additionally, there is a lack of exploration into how cultural contexts influence the selection and teaching of emotional vocabulary. Research has shown that cultural differences significantly impact emotional expression, with some cultures emphasizing collectivist emotional norms, such as empathy and harmony (Kikutani et al., 2024), while others prioritize individual emotional expression and independence (Imada, 2012). These cultural nuances play a vital role in shaping how emotional vocabulary is represented in teaching materials, potentially limiting their relevance in diverse educational contexts. Addressing these gaps, this study not only examines the presence and categorization of emotional vocabulary in EFL textbooks but also considers how cultural factors influence its pedagogical application, providing a more comprehensive framework for fostering emotional intelligence in pre-service teachers.

Despite growing recognition of the importance of emotional intelligence (EI) and emotion vocabulary in language learning, existing EFL (English as a Foreign Language) materials, including popular textbooks like the Headway series, which is widely used to train pre-service EFL teachers in Chile, often lack a systematic focus on integrating emotional intelligence training and emotion vocabulary development. The underrepresentation of emotion vocabulary leaves learners ill-equipped to communicate emotions effectively in a foreign language, impacting their sociopragmatic competence and emotional awareness. Moreover, pre-service EFL teachers are not adequately prepared to teach emotional vocabulary, which could foster emotional intelligence in their future classrooms. This lack of emphasis on emotional intelligence and emotion vocabulary in current EFL materials necessitates a closer investigation to bridge this gap.

Thus, this study seeks to address the critical gap in the integration of emotional vocabulary in EFL materials and its potential to foster emotional intelligence (EI) in pre-service teachers. Specifically, it aims to quantify, categorize, and classify emotion vocabulary in the widely used Headway series and develop a systematic teaching model to enhance socio-emotional competencies in EFL teacher training. The following research questions guide this investigation:

1. How many emotion vocabulary words are present across all levels of the Headway series?
2. How can emotion vocabulary in the Headway series be categorized according to basic emotions (joy, anger, fear, sadness, surprise, and disgust)?
3. How can emotion vocabulary in the Headway series be classified by valence (positive, negative, neutral)?
4. How is emotion vocabulary in the Headway series distributed by word class (verb, noun, adjective, adverb)?
5. How can the findings on emotion vocabulary be used to develop a systematic teaching model for fostering emotional intelligence in pre-service EFL teachers?

By addressing these questions, the study aims to build a foundation for the systematic inclusion of emotional vocabulary in EFL teacher training and explore its pedagogical implications for fostering EI. The objectives are to provide a comprehensive analysis of emotional vocabulary in the Headway series and propose a progressive teaching model that scaffolds emotional vocabulary instruction to support pre-service teachers' socio-emotional and linguistic development.

Theoretical framework: emotional intelligence theory

Goleman's Emotional Intelligence (EI) Theory emphasizes the importance of emotional awareness, regulation, empathy, and social skills for personal and professional success, and in language education, EI is increasingly recognized as a crucial skill for effective teaching and learning. Goleman's model provides a theoretical foundation for understanding how explicit instruction in emotion vocabulary can develop EI in pre-service EFL teachers (Guntersdorfer and Golubeva, 2018). Teaching emotional vocabulary equips future teachers with the tools to express, identify, and understand emotions, which are core components of EI. This instruction plays a crucial role in enhancing teachers' self-awareness and their ability to cultivate both emotional and linguistic skills in learners. Research indicates that EI is essential for teacher effectiveness, helping educators navigate classroom challenges and foster positive learning environments (Sucaromana, 2012). Moreover, EI and social intelligence (SI) are recognized as core competencies for language teachers, with studies showing positive correlations between EI/SI levels and teaching experience (Mercer and Gkonou, 2017). Integrating EI into language teaching materials and practices promotes emotionally aware and socially competent teachers (Salovey and Sluyter, 1997), underscoring the need for explicit instruction in both pre-service and in-service programs to improve instructional performance and teacher retention (Corcoran and Tormey, 2012). Thus, incorporating EI and emotion vocabulary in EFL education not only enhances teacher effectiveness but also supports broader educational goals related to teacher well-being and student success.

Conceptual framework

The conceptual framework for this study is designed to guide the investigation of emotion vocabulary in the *Headway* series and its potential to develop emotional intelligence (EI) in pre-service EFL teachers. It is structured around the relationship between emotion

vocabulary, its categorization, and its role in fostering EI through teacher training programs. The independent variables include the emotion vocabulary in the *Headway* series, which will be measured by counting the emotion vocabulary words across all levels (Research Objective 1) and categorized by basic emotions (joy, anger, fear, sadness, surprise, and disgust), valence (positive, negative, neutral), and word class (verb, noun, adjective, adverb) (Research Objectives 2–4). The mediating variable is the systematic teaching model, which will be developed from the analysis of emotion vocabulary and will integrate emotion vocabulary instruction with emotional intelligence development (Research Objective 5). The dependent variable focuses on fostering emotional intelligence in pre-service EFL teachers, aiming to enhance their emotional awareness, regulation, and social skills, ultimately contributing to improved teaching effectiveness and classroom management. The conceptual flow begins with the identification and categorization of emotion words in EFL materials, leading to the development of an instructional model, which is then applied to foster emotional intelligence in pre-service teachers, resulting in better classroom management, communication, and student outcomes. This framework demonstrates the sequential relationship between emotion vocabulary analysis and its application to develop a systematic teaching model aimed at fostering EI in pre-service teachers.

Literature review

Recent research has provided significant insights into how emotion vocabulary is lexicalized and its importance in language learning. Bāk (2022a) found that English predominantly lexicalizes emotions as adjectives, with negative emotions more frequently expressed as verbs and positive emotions as nouns, revealing the presence of the negative differentiation effect and the Pollyanna effect in both English and Polish (Bāk, 2022a, 2022b). In the context of EFL education, Sánchez and Pérez-García (2020) noted that newer EFL textbooks contain more emotion-laden words, reflecting a growing recognition of the role of emotional language in language acquisition. Lindquist (2017) further emphasized the crucial role of language in shaping emotion perception and experience. Additionally, socio-economic factors, such as emotioncy, have been found to influence vocabulary learning and retention, with highlighting the connection between socio-economic background and emotional experiences in vocabulary acquisition (Pishghadam and Shayesteh, 2016). Jiménez Catalán and Dewaele (2017) discovered that young Spanish EFL learners produced more words for non-emotion prompts than for emotion prompts, with positive prompts eliciting more words than negative ones, indicating a potential ease in engaging with positive emotional content. These findings underscore the complex relationship between emotion vocabulary, language learning, and emotional intelligence development, highlighting the need for a systematic approach to integrating emotional language in EFL education.

The categorization of emotions and emotional intelligence (EI) are closely related concepts in psychological research, both vital for emotional and social functioning. Emotions are often categorized into universal basic categories such as joy, anger, fear, sadness, and surprise, which are considered pancultural, while subordinate categories can be culture-specific (Russell, 1991; Shaver et al., 1987). These emotions

can also be classified by valence, grouping them into positive, negative, or neutral categories. Positive emotions like joy are associated with beneficial effects on learning, while negative emotions such as anger and fear can impede emotional regulation. Salovey and Sluyter (1997) defined EI as the ability to perceive, express, understand, and regulate emotions in oneself and others, and is a set of skills that can be developed and linked to academic achievement (Götz et al., 2005). The development of EI is influenced by various factors, including motor, linguistic, and mental inference abilities (Hoemann et al., 2020), which are essential for effective emotion perception and categorization. Educational programs have been shown to foster EI, although they have limitations (Salovey and Sluyter, 1997). These programs often focus on improving learners' ability to recognize and categorize emotions, which is critical for social competence and emotional regulation (Punia et al., 2015). Thus, understanding emotion categorization and developing EI are crucial for fostering emotional regulation, social competence, and overall well-being.

Emotion vocabulary spans multiple linguistic domains, including parts of speech, lexical semantics, and cultural categorization. Rijkhoff (2007) highlights typological variations in parts-of-speech systems across languages, which apply to emotion vocabulary, where words are classified into verbs, nouns, adjectives, and adverbs, each serving distinct semantic roles. Majid (2012) emphasizes that emotions interact with language at various structural levels, influencing how emotions are categorized and expressed. Soriano (2013) also stresses the importance of lexical semantics in understanding the function of emotion words in discourse. In the context of EFL materials, Sánchez and Pérez-García (2020) show that emotion vocabulary has been increasingly incorporated, with a focus on categorizing these words by part of speech for better language acquisition. Sh (2022) examines emotional verbs within English linguoculturology, while Wu and Zhang (2020) differentiate between emotion-label and emotion-laden words in affective neurolinguistics, highlighting their varied roles in conveying emotional content. Moreover, Russell (1991) explores cultural differences in emotion categorization, and Pennebaker et al. (2003) demonstrate that the use of function words, such as adjectives and adverbs, reveals deeper psychological and social aspects of individuals. These studies collectively underscore the significance of categorizing emotion vocabulary into parts of speech, influencing not only language learning but also emotional perception and cross-cultural communication.

Emotional intelligence (EI) plays a crucial role in teacher education, particularly in enhancing classroom management, pedagogical skills, and overall teaching effectiveness (Dick-Bursztyn, 2023). Research has demonstrated that EI significantly improves communication and creates effective learning environments, contributing to better language teaching and learning outcomes (Sucaromana, 2012). The correlation between EI and achievement in EFL classrooms is well-documented, with emotionally intelligent teachers showing greater success in managing both their own emotions and those of their students (Gharavi et al., 2013). This capacity is vital for improving teacher well-being, job performance, and student outcomes (Palomera et al., 2008). Teachers with high EI are better equipped to handle the complexities of the classroom, fostering positive environments and facilitating learning more effectively (Jiménez Catalán and Dewaele, 2017). Birwatkar (2014) states that the integration of EI into teacher education has the potential to transform educational systems, enhancing both student

achievement and school effectiveness. Therefore, developing EI in pre-service teacher programs, especially in EFL contexts, is essential for improving emotional awareness and teaching efficacy.

Research on vocabulary content in EFL (English as a Foreign Language) textbooks has explored various aspects, including emotion vocabulary, high-frequency word coverage, and learning approaches. Sun and Dang (2020) examined vocabulary size requirements for comprehension, revealing significant variation across textbooks, with estimates suggesting that learners need between 3,000 and 6,000 word families for effective comprehension (Rahmat and Coxhead, 2021). While Catalán and Francisco (2008) highlighted the role of high-frequency vocabulary in language learning, Nakayama (2022) develop corpus-based analysis of Japanese EFL textbooks, and found that these textbooks covered a substantial number of high-frequency words as well as lacked sufficient coverage of lower-frequency bands. Additionally, Sánchez et al. (2022) showed that using imagination elicitation methods produced better results than context provision for learning emotional vocabulary. Xodabande et al. (2022) further underscored the need for contextualizing vocabulary to enhance learning outcomes. These findings collectively underscore the importance of balanced vocabulary coverage, including both high-frequency words and emotional vocabulary, to support comprehensive language learning in EFL textbooks.

While recent research has highlighted the significance of emotion vocabulary in language learning, particularly in fostering emotional intelligence (EI) and enhancing sociopragmatic competence, there remains a critical gap in the systematic inclusion and categorization of emotion vocabulary in widely used EFL materials such as the *Headway* series. Despite growing recognition of the importance of emotional language in EFL education, Dar (2018) indicate that many textbooks still underrepresent emotion vocabulary or fail to categorize it in ways that would facilitate language acquisition and emotional intelligence development. Furthermore, although some research has explored the emotional and psychological effects of emotion-laden texts (Driver, 2022), there has been limited focus on how this vocabulary can be systematically integrated into pre-service EFL teacher training programs to foster EI. This gap necessitates an in-depth investigation into the presence and categorization of emotion vocabulary in the *Headway* series, with the aim of using these findings to develop effective teaching models for EI in EFL contexts.

Methods

Research design

This study adopted a mixed-methods approach, integrating both qualitative and quantitative research methods to provide a comprehensive understanding of the role of emotion vocabulary in fostering emotional intelligence (EI) among pre-service EFL teachers. This combination allows for a robust analysis, leveraging the strengths of both approaches to offer a richer dataset and more nuanced insights (Creswell and Clark, 2017). The quantitative aspect focused on systematically measuring and categorizing emotion vocabulary across the *Headway* series using established lexicons such as the EMCAT-ENG (Bak, 2022a) and Warriner's affective word list of valence, arousal and dominance (Warriner et al., 2013). Emotion-related words were counted and classified by basic emotions (joy,

anger, fear, sadness, surprise, and disgust), valence (positive, negative, neutral), and word class (verb, noun, adjective, adverb). This quantitative analysis provided numerical data to identify trends and gaps in the presence of emotion vocabulary across the textbooks. The qualitative component involved a thematic analysis that aligned emotion vocabulary with key emotional intelligence components, such as self-awareness, emotional regulation, and empathy, which are essential for pre-service teachers (Goleman, 2020). This mixed-methods design offers objective measures of vocabulary inclusion through quantitative data while providing deeper insights into how this vocabulary can be pedagogically aligned with emotional intelligence to foster more effective teaching outcomes (Tashakkori, 1998).

Data source

In this study, data were systematically collected from the Headway Vocabulary Wordlist, which is meticulously aligned with the units and themes of the corresponding textbooks. These vocabulary words were carefully curated to match the proficiency levels of learners, spanning six levels: beginner, elementary, pre-intermediate, intermediate, upper-intermediate, and advanced. The wordlists covered a wide range of topics such as travel, work, and relationships, and were organized by unit and theme to ensure comprehensive coverage across all textbook levels. Each wordlist is associated with the widely recognized Headway English as a Foreign Language (EFL) series, which is not only esteemed for its effectiveness in enhancing language acquisition and boosting learners' confidence but also widely used to train pre-service English teachers across the world, including Chile. The textbook series has been the subject of numerous studies, including those exploring Sustainable Development Goals (SDG) content (Lasekan et al., 2023). The wordlists included various word types—nouns, verbs, adjectives, and adverbs—accompanied by definitions and, in some cases, phonetic transcriptions to facilitate accurate pronunciation. Additionally, contextual examples of word usage in sentences were provided to aid learners in understanding both meaning and application. Common collocations and useful phrases were also included, enabling learners to use vocabulary naturally and fluently in both spoken and written communication. This comprehensive wordlist serves as a valuable resource for reinforcing vocabulary acquisition and supporting both retention and practical application, playing a vital role in the overall learning process within the Headway series.

Data analysis

Quantitative analysis

The quantitative aspect of the methodology focused on systematically measuring the frequency and categorization of emotion vocabulary within the Headway series. By employing established lexicons such as EMCAT-ENG (Bağ, 2022a) and Warriner's affective word list (Warriner et al., 2013), emotion words were classified by basic emotions (e.g., joy, sadness, anger), valence (positive, negative, neutral), and part-of-speech (verb, noun, adjective, adverb). Statistical analyses, conducted using tools like Atlas.ti, allowed for descriptive insights into the distribution and trends of emotion vocabulary across

proficiency levels. This quantitative analysis offers objective, replicable data, identifying gaps and trends in the inclusion of emotion vocabulary within the textbooks.

Qualitative analysis

The qualitative component complemented the quantitative findings by conducting a thematic analysis that linked identified emotion vocabulary to key EI components such as self-awareness, emotional regulation, and empathy (Goleman, 2020). This analysis provided deeper insights into the pedagogical potential of emotion vocabulary, highlighting its relevance to fostering EI among pre-service teachers. The qualitative analysis moved beyond numerical trends to explore the contextual and instructional significance of these words in real-world teaching scenarios.

Thus, this mixed-methods approach is not only sequential but also complementary. This approach allows researchers to explore different dimensions of a research question, leading to more rigorous and comprehensive insights (Cisneros-Barahona et al., 2024). The quantitative data provided a foundational understanding of the prevalence and distribution of emotion vocabulary, while the qualitative analysis interprets these findings in the context of emotional intelligence and pedagogy. By combining the strengths of quantitative precision and qualitative depth, the mixed-methods design provides a holistic framework for exploring how emotion vocabulary can be systematically incorporated into teacher training to enhance emotional intelligence and pedagogical effectiveness.

Reliability and validity

To ensure reliability, inter-coder agreement was employed during the content and thematic analyses. Multiple researchers independently categorized emotion vocabulary by basic emotions (e.g., joy, sadness), valence (positive, neutral, negative), and word class (verb, noun, adjective, adverb). Discrepancies were resolved through discussions, ensuring consistency and reducing bias. This approach provided a robust and replicable dataset for analyzing the Headway series.

For validity, the systematic teaching model was reviewed through expert evaluations and focus group discussions. Expert reviews ensured alignment with Goleman's Emotional Intelligence framework and practical relevance in teacher training, while focus groups with pre-service teachers assessed the model's applicability and effectiveness.

Results

The findings for Research Objective 1, which sought to quantify the emotion vocabulary across all levels of the Headway series, reveal a progressive increase in emotional vocabulary as proficiency levels advance. At the beginner and elementary levels (Figure 1), the count is relatively low, with approximately 40 words at the beginner stage and slightly fewer at the elementary level. However, the pre-intermediate and intermediate levels show a marked increase, particularly at the intermediate level, where the count rises to nearly 90 words. The most significant growth occurs at the advanced level, where the number of emotion vocabulary words exceeds 100. This progression reflects a deliberate pedagogical strategy, gradually

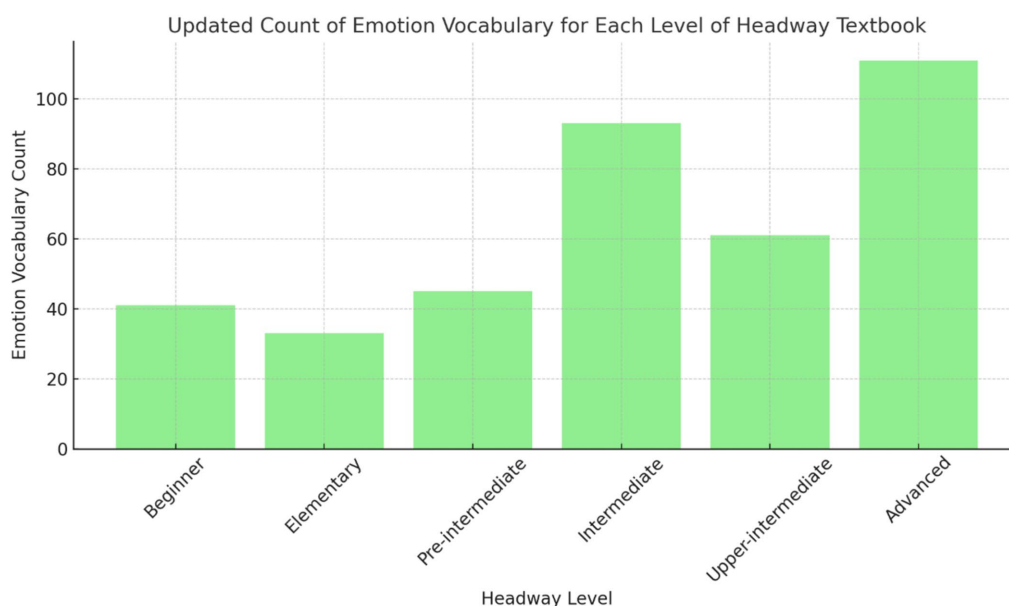


FIGURE 1
Emotion vocabulary count across proficiency levels in the headway series.

introducing more complex emotional language as learners become more proficient. The lower counts at the early stages indicate a potential gap in early exposure to emotion vocabulary, suggesting that greater emphasis on emotional expressions at these levels could enhance emotional intelligence development in learners.

The results for Research Objective 2, which focused on categorizing and quantifying emotion vocabulary into basic emotions (joy, anger, fear, sadness, surprise, and disgust) across all levels of the *Headway* series (Figure 2), reveal distinct trends. Joy is the most frequent emotion across all levels, particularly prominent at the beginner level, suggesting a focus on positive emotions early in language learning to build confidence. Anger and fear are moderately represented at all levels, with a noticeable increase at intermediate and advanced stages, reflecting the gradual introduction of more complex and negative emotions as proficiency grows. Sadness shows a steady presence across levels, with a significant rise at the higher stages, indicating its role in advanced sociopragmatic competence. Surprise and disgust are less represented overall but increase slightly at the upper-intermediate and advanced levels, highlighting their complexity and later introduction in emotional vocabulary development. These findings suggest a structured progression of emotional vocabulary, with simpler, positive emotions introduced at lower levels and more complex, negative emotions reserved for advanced learners.

The findings for Research Objective 3, which aimed to classify and quantify emotion vocabulary by valence (positive, negative, neutral) across all levels of the *Headway* series (Figure 3), reveal that negative emotion vocabulary is dominant across all proficiency levels, from beginner to advanced. This suggests a strong focus on teaching learners to express and understand negative emotions, which are essential for real-life communication and emotional literacy. Positive emotion vocabulary is consistently present but less frequent, with a slight increase at intermediate and advanced stages, indicating an emphasis on handling complex emotional communication involving both positive and negative contexts. Neutral emotion vocabulary,

while the least represented, progressively increases at higher proficiency levels, particularly at intermediate and advanced stages, suggesting its role in facilitating nuanced emotional expressions as learners' language skills develop. These findings reflect a pedagogical strategy that prepares learners to navigate both positive and negative emotional interactions while gradually introducing more subtle, neutral emotions in advanced communication scenarios.

Research Objective 4, which sought to categorize and quantify emotion vocabulary by word class (verb, noun, adjective, adverb) across all levels of the *Headway* series (Figure 4), indicate that verbs and nouns dominate emotional vocabulary across all proficiency levels. Verbs, consistently represented, highlight the importance of action-oriented emotional expressions, while nouns, particularly prominent at the intermediate level, allow learners to discuss emotions more abstractly. Adjectives play a significant role, especially at higher levels, helping learners describe emotions in nuanced ways. Adverbs are the least represented word class, with their frequency increasing at the upper-intermediate and advanced stages, suggesting they are introduced later to refine emotional expression. This progression demonstrates a structured approach, starting with fundamental emotional vocabulary and gradually incorporating more complex descriptive language as learners advance in proficiency.

Systematic vocabulary teaching model to foster emotional intelligence in pre-service EFL teachers

Emotional intelligence (EI) is increasingly recognized as a crucial skill for teachers, particularly in language education, as it enhances classroom management, communication, and learning outcomes (Marashi and Zaferanchi, 2010). Pre-service EFL teachers, in particular, benefit from EI development as it equips them to manage their emotions and fosters empathy and motivation in their students

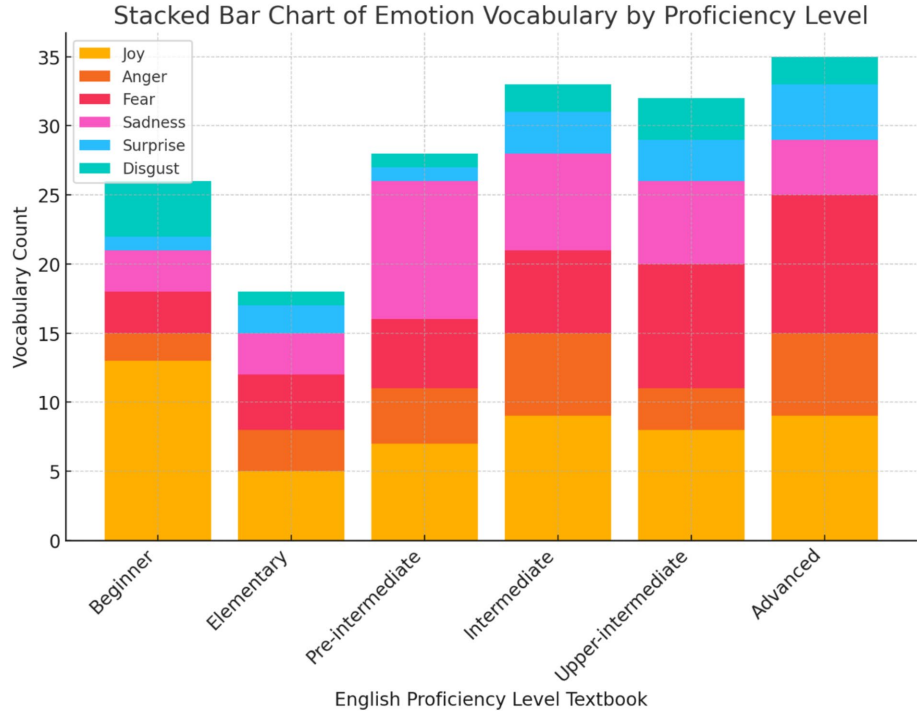


FIGURE 2
Categorization of basic emotions in the headway series across proficiency levels.

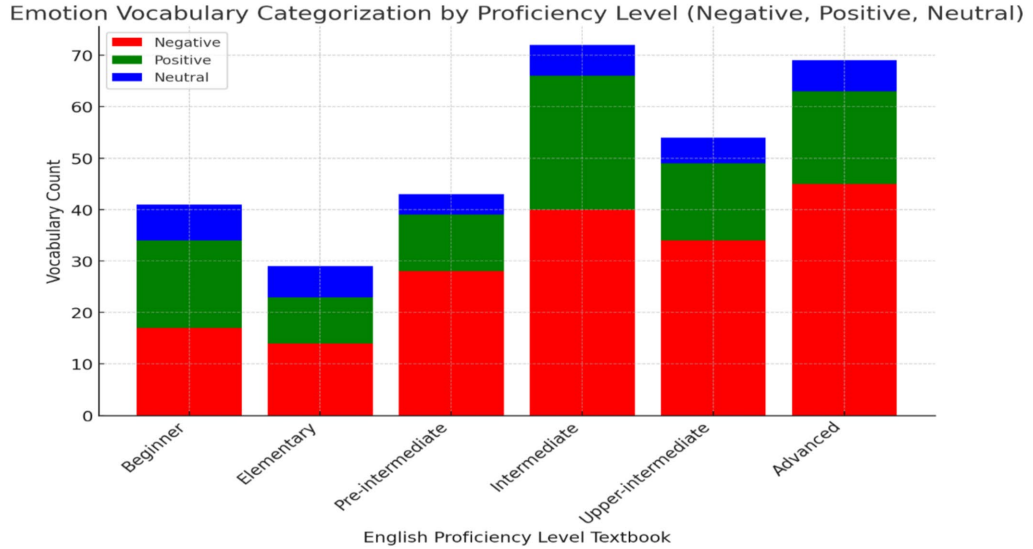
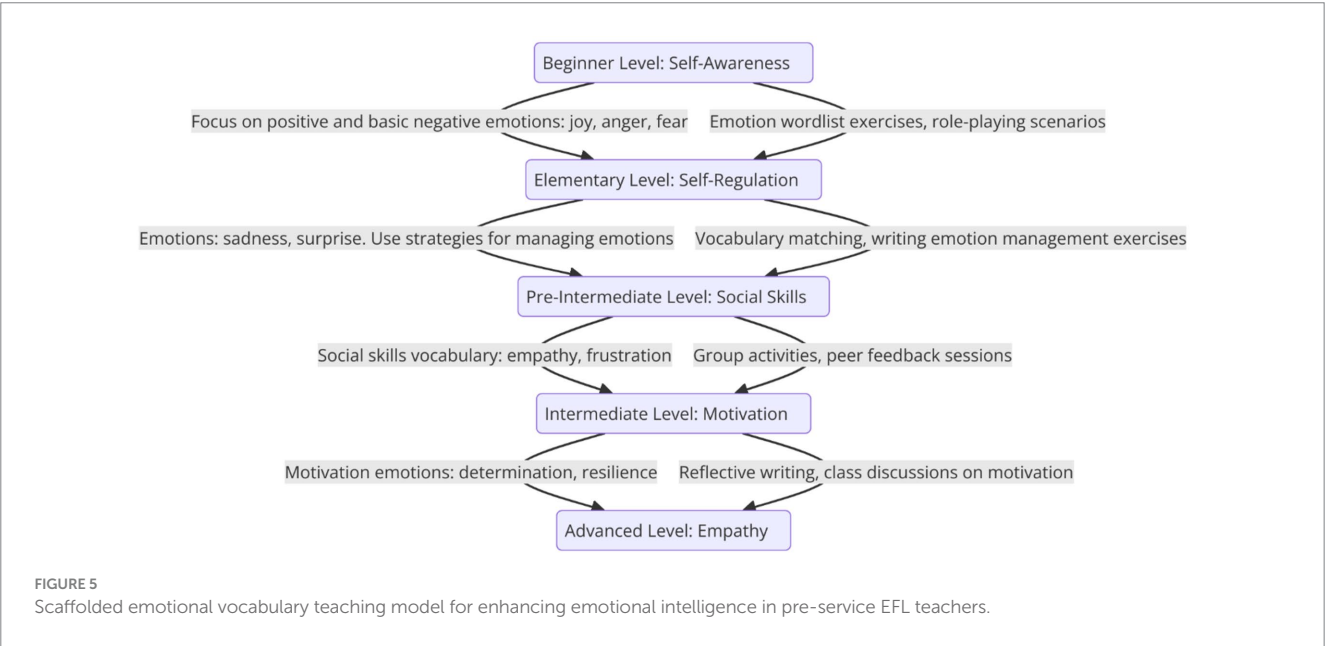
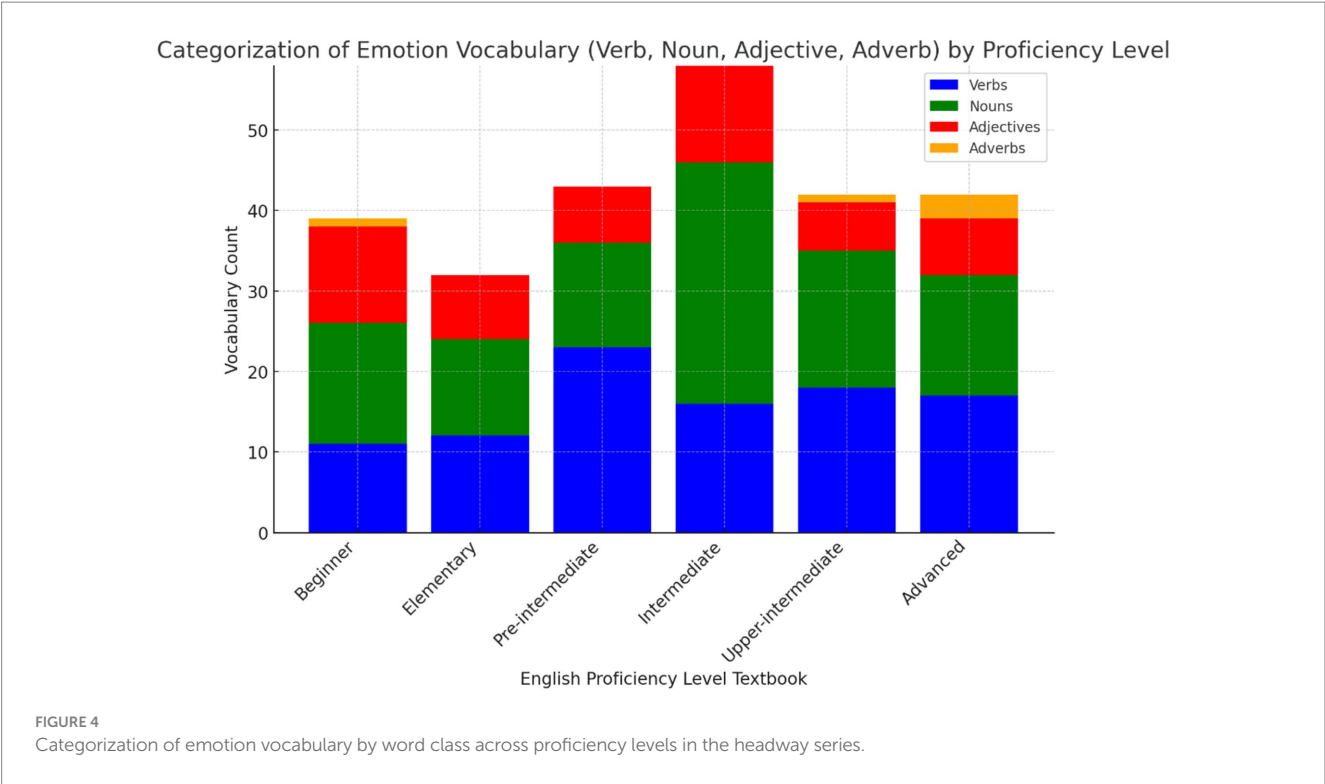


FIGURE 3
Emotion vocabulary categorization by valence across proficiency levels in the headway series.

(Turner and Stough, 2020). One effective way to foster EI in pre-service teachers is through systematic vocabulary instruction that aligns with the key components of EI: self-awareness, self-regulation, social skills, motivation, and empathy (Goleman, 2020). This paper proposes a teaching model based on findings from the Headway series, aimed at progressively introducing emotional vocabulary to support the development of EI in pre-service EFL teachers.

Proposed model overview

The development of the Systematic Vocabulary Teaching model leverages Design-Based Research (DBR) methodology, which enables the iterative design and refinement of educational interventions through analysis, implementation, and evaluation (Tweeten and Hung, 2023). As shown in Figure 5, the model is



structured around a scaffolded approach to vocabulary instruction (Booth, 2014), progressively introducing and expanding emotional vocabulary across five proficiency levels: beginner, elementary, pre-intermediate, intermediate, and advanced. Using DBR, the sequence of these proficiency levels was informed by empirical findings from the Headway series and aligned with theoretical frameworks such as Goleman’s Emotional Intelligence (EI) Theory. Emotional vocabulary focusses and corresponding EI components were systematically mapped to each level, ensuring alignment with learners’ linguistic and socio-emotional development. Each level

addresses specific EI components—such as self-awareness, self-regulation, and empathy—helping pre-service teachers build emotional literacy and develop the emotional intelligence needed for effective teaching. Activities, such as role-playing, vocabulary matching, and reflective journaling, were co-designed with educators, piloted, and refined based on real-world feedback to optimize engagement and outcomes. Each level’s justification was grounded in both theoretical insights and classroom observations, ensuring that the model remained practical, effective, and contextually relevant.

Beginner level (focus: self-awareness)

- Vocabulary Focus: Positive and basic negative emotions (e.g., joy, anger, fear).
- EI Component: Self-awareness—At the beginner level, teachers need to recognize and name their own emotions and those of their learners.
- Activities:
 - Emotion wordlist exercises focused on identifying basic emotions (e.g., “What makes you feel joy?”).
 - Role-playing scenarios where teachers identify the emotions in conversations.
- Justification: At this stage, developing self-awareness is critical for personal emotional intelligence and future emotional regulation. Recognizing emotions helps teachers understand their emotional states, a foundational skill in EI (Goleman, 2020).

Elementary level (focus: self-regulation)

- Vocabulary Focus: Adjectives and verbs for describing emotions (e.g., sadness, surprise).
- EI Component: Self-regulation—Teachers learn to regulate emotions in different classroom scenarios.
- Activities:
 - Vocabulary matching tasks linking emotions with appropriate classroom responses (e.g., “If you feel anger, how would you react?”).
 - Writing exercises that describe emotions and propose strategies for managing them (e.g., “When I feel frustrated, I...”).
- Justification: Self-regulation is essential for managing emotions, especially in stressful situations. Expanding emotional vocabulary helps teachers describe and manage their emotional responses (Hall and Goetz, 2013).

Pre-intermediate level (focus: social skills)

- Vocabulary Focus: Broader range of adjectives, including neutral emotional vocabulary (e.g., empathy, frustration).
- EI Component: Social skills—Teachers develop the ability to communicate emotions effectively in social settings.
- Activities:
 - Group activities where learners use emotion vocabulary to describe social interactions and resolve conflicts (e.g., “How would you express empathy in this situation?”).
 - Peer feedback sessions evaluating emotional communication during role-playing tasks.
- Justification: Social skills are crucial for effective classroom management and communication. Expanding emotional vocabulary helps teachers navigate social interactions and build rapport with students (Alzina and Guiu, 2018).

Intermediate level (focus: motivation)

- Vocabulary Focus: Expanded emotion vocabulary, including motivational and goal-oriented emotions (e.g., determination, resilience).

- EI Component: Motivation—Understanding and expressing motivation helps pre-service teachers stay committed to their goals.
- Activities:
 - Reflective journal writing describing how emotions like frustration and determination impact teaching practice.
 - Class discussions exploring motivation using emotion vocabulary to discuss persistence in challenging situations.
- Justification: Motivation-related emotional vocabulary helps teachers inspire themselves and their students, fostering perseverance and goal-setting (Hall and Goetz, 2013).

Advanced level (focus: empathy)

- Vocabulary Focus: Complex emotional expressions related to empathy and understanding others (e.g., regret, compassion).
- EI Component: Empathy—Teachers develop the ability to recognize and respond empathetically to learners’ emotions.
- Activities:
 - Advanced role-playing scenarios where learners use empathy-related vocabulary to respond to emotional classroom situations.
 - Reflective writing analyzing classroom cases involving student emotions and proposing empathetic responses.
- Justification: Empathy is key for creating supportive learning environments. Mastering emotion vocabulary that conveys empathy enables teachers to foster emotional connections with their students, enhancing learning outcomes (Mercer, 2016).

The systematic teaching model for fostering emotional intelligence (EI) in pre-service EFL teachers is directly shaped by the findings from the *Headway* series, which reveal a progressive increase in emotional vocabulary complexity across proficiency levels. Simpler emotions like joy and fear are introduced at the beginner level to build self-awareness, while more complex emotions such as empathy and frustration are integrated at advanced levels to foster social skills and empathy. The focus on positive emotions in the early stages supports the development of self-awareness, while the inclusion of more nuanced negative emotions at advanced levels aids in fostering empathy and managing complex classroom interactions. Additionally, the prominence of negative emotions across all levels emphasizes the need for self-regulation and motivation in the elementary and intermediate stages, helping teachers learn to identify and manage emotions effectively. As learners progress, the introduction of neutral emotional vocabulary enhances their ability to express emotions with subtlety, which is crucial for empathy. The categorization of emotion vocabulary by word class—where verbs and nouns dominate at lower levels, and adjectives and adverbs increase at higher levels—further informs vocabulary activities that develop social skills and empathy. These insights ensure that the model aligns with the progressive development of emotional intelligence, equipping pre-service teachers with the emotional and linguistic tools necessary for effective classroom management and improved student outcomes.

Discussion

Counting the number of emotion vocabulary words across all levels of the *Headway* series showed a clear progression in emotional

vocabulary as proficiency levels increase. This aligns with prior research emphasizing the role of emotion vocabulary in both language acquisition and the development of emotional intelligence (Sánchez and Pérez-García, 2020). While the introduction highlighted a general scarcity of emotion vocabulary in EFL materials (Dewaele, 2015), the results indicate that the *Headway* series employs a deliberate strategy to gradually introduce more complex emotional language at higher proficiency levels, which supports emotional intelligence growth. This gradual increase reflects emotional intelligence theory, where exposure to simpler emotions at earlier stages helps build self-awareness and social competence over time (Goleman, 2020). However, the relatively low inclusion of emotion vocabulary at the beginner and elementary levels raises concerns about early exposure, mirroring criticisms in the literature that call for greater emphasis on emotional language at lower proficiency levels to support early emotional intelligence development (Alzina and Guiu, 2018). Thus, while the *Headway* series demonstrates improvements, the findings suggest a need for stronger focus on emotional vocabulary inclusion at the initial stages to fully realize the potential of emotional intelligence teaching in EFL contexts.

Addressing findings related to Research Objective 2, which focused on categorizing and quantifying emotion vocabulary within the *Headway* series according to the six basic emotions: joy, anger, fear, sadness, surprise, and disgust. The analysis reveals notable patterns in the distribution of these emotions, providing insights into how emotional language is represented across the series. Joy emerged as the most frequent emotion, particularly at the beginner level, which aligns with the introduction's emphasis on positive emotions as foundational for building learner confidence (Sánchez and Pérez-García, 2020). The lower representation of complex negative emotions, such as disgust, at early proficiency levels supports the literature's suggestion that advanced learners are better equipped to handle nuanced emotional language (Bak, 2022b). The gradual introduction of more complex negative emotions at intermediate and advanced stages reflects the progressive development of emotional vocabulary, which parallels learners' linguistic growth and sociopragmatic competence (Dewaele, 2015). While emotions such as joy and sadness are relatively balanced across levels, the late inclusion of emotions like surprise and disgust indicates a deliberate effort to introduce more challenging emotional vocabulary only after learners have built a stronger linguistic foundation. This finding supports the idea that negative emotions play a significant role in vocabulary retention and emotional intelligence development at higher levels (Driver, 2022). However, the limited presence of negative emotions at the beginner and elementary stages raises concerns about the early development of emotional literacy, reinforcing the literature's call for a more comprehensive integration of emotional vocabulary from the start to enhance learners' emotional awareness (Alzina and Guiu, 2018).

One of the objectives of this study was to classify and quantify emotion vocabulary by valence (positive, negative, neutral) across all levels of the *Headway* series, revealed a dominance of negative emotion vocabulary throughout the proficiency levels. This aligns with Driver's (2022) claim that exposure to negative and neutral emotion-laden texts enhance vocabulary retention and supports better learning outcomes. However, this finding contrasts with the introduction's emphasis on the importance of positive emotions, particularly in early language acquisition (Sánchez and Pérez-García, 2020). Although positive emotions are present across all levels, their

frequency remains lower compared to negative emotions, especially at intermediate and advanced stages, which suggests a pedagogical focus on preparing learners for more complex emotional communication. The gradual introduction of neutral emotion vocabulary at higher proficiency levels is consistent with the literature, which indicates that neutral emotional expressions gain importance as learners' fluency increases (Bak, 2022b). While the prominence of negative emotion vocabulary may support advanced language acquisition, the balance between positive and neutral emotions could be improved at lower levels to foster early emotional intelligence development (Dewaele, 2015), which is crucial for pre-service teachers to manage emotions in educational contexts.

Categorizing and quantifying emotion vocabulary by word class (verb, noun, adjective, adverb) across all levels of the *Headway* series revealed that verbs and nouns dominate the emotional vocabulary throughout all proficiency levels. This aligns with the literature's emphasis on the role of verbs in facilitating action-oriented emotional expressions and nouns in enabling more abstract emotional discussions (Majid, 2012). However, adjectives, which are critical for precise emotional descriptions, only become prominent at higher levels, potentially limiting learners' ability to describe emotions with nuance in earlier stages (Rijkhoff, 2007). The lower representation of adverbs, especially at lower levels, suggests a gap in providing learners with the tools to express emotions with subtlety, a skill important for advanced communication (Dar, 2018). While the structured progression of emotional vocabulary development aligns with theoretical frameworks from the literature, the findings highlight the need for a more balanced inclusion of word classes, particularly at earlier levels, to enhance learners' ability to express and regulate emotions from the start of their language learning journey.

This investigation focused on developing a systematic teaching model to foster emotional intelligence (EI) in pre-service EFL teachers, align with the theoretical foundations discussed in the literature but also reveal areas for improvement. The model's progressive integration of more complex emotional vocabulary as proficiency increases reflects Goleman's (2020) theory of emotional intelligence, where emotional awareness and regulation are built gradually. This approach is consistent with Sánchez and Pérez-García's (2020) emphasis on the importance of emotion-laden vocabulary for enhancing both language acquisition and EI development. However, despite the model's effectiveness in scaffolding emotional vocabulary instruction across proficiency levels, the underrepresentation of emotional vocabulary at the beginner and elementary stages, as noted in earlier findings, may limit the early development of self-awareness and emotional regulation in pre-service teachers. This gap suggests a need for more balanced inclusion of emotional vocabulary across all levels to ensure early exposure to emotional concepts, which is crucial for the development of EI from the outset (Dewaele, 2015). While the model holds significant potential, addressing these gaps would enhance its effectiveness in fostering emotional intelligence in future educators.

Enhanced emotional intelligence (EI) in pre-service EFL teachers, as fostered by the proposed systematic vocabulary teaching model, can significantly improve classroom management, communication, and student outcomes. Research indicates that emotionally intelligent teachers are better equipped to manage the emotional dynamics of the classroom, leading to more effective classroom management and a more supportive learning environment (Goleman, 2020). Teachers

with strong EI skills, such as self-awareness and emotional regulation, are able to communicate more empathetically and clearly with their students, which fosters trust and rapport, key elements for successful learning experiences (Coombe et al., 2020). Additionally, the ability to recognize and respond to students' emotional states allows teachers to address emotional barriers to learning, ultimately improving student engagement and performance (Sun et al., 2024). The model's emphasis on progressively building emotional vocabulary helps teachers develop these essential skills, which are critical not only for their professional well-being but also for promoting positive student outcomes, such as increased motivation and language proficiency. Consequently, the integration of emotional intelligence through language instruction supports both teacher effectiveness and student success in EFL contexts.

The theoretical and conceptual frameworks in this study play a pivotal role in guiding the research and ensuring its alignment with existing literature on emotional intelligence (EI) and language acquisition. Goleman's Emotional Intelligence Theory serves as the theoretical foundation, emphasizing the importance of emotional awareness, regulation, empathy, and social skills. This framework justifies the need to incorporate emotional vocabulary into EFL teaching, aligning with prior research that underscores the role of EI in enhancing classroom management, communication, and student outcomes (Mercer, 2016). The conceptual framework further connects the study's objectives by outlining how emotion vocabulary is categorized and measured across the *Headway* series and how these findings inform the development of a systematic teaching model. This clear relationship between emotion vocabulary and EI development reflects the literature's call for a more structured integration of emotional concepts into language teaching (Sánchez and Pérez-García, 2020; Dewaele, 2015). Ultimately, these frameworks ensure that the study is methodologically sound and contribute to advancing both EI and language pedagogy, providing a solid foundation for enhancing pre-service teachers' professional efficacy and emotional competence.

The primary advantage of the proposed Systematic Vocabulary Teaching model lies in its direct focus on developing emotional literacy and emotional intelligence (EI) skills among pre-service teachers, positioning them at the core of the intervention while also acknowledging the indirect benefits for their students. By emphasizing their self-awareness, self-regulation, and empathy, the model directly supports their ability to navigate complex classroom dynamics, manage stress, and foster positive relationships with students (Jiang et al., 2022). This targeted focus ensures alignment with the model's primary objective of equipping educators with the skills necessary for effective classroom management and communication. However, the indirect impact on students is also significant, as emotionally literate teachers are better positioned to create supportive learning environments that enhance student engagement and well-being (Gabrys-Barker, 2018). While the model primarily evaluates teacher outcomes, tools like classroom climate surveys or the Classroom Assessment Scoring System could further capture these secondary effects, emphasizing both teacher and student development (Adams et al., 2021).

The systematic and progressive teaching model proposed in this study holds significant potential for adaptation to other EFL teaching materials beyond the *Headway* series, offering broader applicability across diverse educational contexts. The model's core framework, which scaffolds emotional vocabulary instruction from simple to complex and aligns it with socio-emotional competencies, can

be tailored to fit the structure and thematic focus of various EFL resources. For instance, textbooks with a business English focus could emphasize vocabulary related to professional emotional contexts, such as negotiation or conflict resolution (Cui et al., 2021), while materials for academic English could prioritize emotions tied to critical thinking and collaboration (Mestre-Mestre, 2020). Additionally, the model's flexibility allows for cultural and demographic adaptations, ensuring alignment with specific learner needs and socio-cultural norms. To facilitate this broader application, practical guidelines can be developed, such as identifying and categorizing emotional vocabulary from alternative materials and mapping it to appropriate emotional intelligence competencies. By incorporating such adaptability, the proposed model ensures its relevance for educators working with a wide range of teaching resources, fostering emotional intelligence development in diverse learning environments.

Evaluating the impact of the proposed scaffolded model on the development of teachers' emotional literacy and emotional intelligence (EI) is essential for understanding the effective implementation of the model. By employing pre- and post-assessments, reflective journals, and role-play evaluations, the model provides a comprehensive framework for tracking progress in self-awareness, self-regulation, and empathy (Alemdar and Anilan, 2020). Reflective journals reveal changes in teachers' capacity to identify and regulate emotions effectively, aligning with the Emotional Literacy Skills Scale's validated components (Haghani et al., 2014). Role-play scenarios and simulation feedback demonstrate real-time evidence of applying emotional vocabulary and managing classroom dynamics, reinforcing the measurable benefits of emotional competence training (Fincias et al., 2018). Moreover, a focus on teacher and learner interactions supports the promotion of emotional awareness as essential for fostering collaboration and achieving educational goals (Herguner, 2017). By systematically evaluating each competency with these diverse tools, the model not only aligns with theoretical frameworks but also ensures its practical relevance in real-world teaching contexts (Alemdar and Anilan, 2020).

The findings of this study underscore the importance of considering cultural factors in the pedagogical application of emotional vocabulary teaching. Emotional expressions are deeply rooted in cultural norms and values, influencing how emotions are categorized, prioritized, and taught in educational materials. For example, cultures with collectivist orientations, such as Chile, may emphasize emotional vocabulary related to social harmony and empathy (Kikutani et al., 2024), while individualistic cultures may prioritize vocabulary reflecting personal achievement and self-expression (Imada, 2012). This cultural variability suggests that emotional vocabulary in EFL textbooks like the *Headway* series may not fully address the needs of diverse learner populations. The proposed teaching model bridges this gap by incorporating cultural awareness into vocabulary instruction, encouraging educators to adapt emotional vocabulary teaching to reflect the sociocultural contexts of their learners. Activities such as reflective journaling and role-playing can be tailored to highlight culturally relevant emotions, fostering both linguistic proficiency and intercultural competence (Russell, 1991). By integrating cultural sensitivity, the model ensures that emotional vocabulary instruction aligns with the diverse emotional frameworks of learners, enhancing its relevance and effectiveness in fostering emotional intelligence.

Based on the findings and discussion in this study, several recommendations emerge for teachers, higher education institutions,

and policymakers. For teachers, it is crucial to integrate emotional vocabulary instruction within the EFL curriculum at all proficiency levels to foster emotional intelligence (EI) in students. Educators should employ strategies that enhance self-awareness, emotional regulation, and empathy, facilitating not only language acquisition but also emotional literacy (Coombe et al., 2020). Higher education institutions should incorporate EI training into pre-service teacher education programs, ensuring that future educators are well-equipped with both linguistic and emotional skills necessary for managing classroom dynamics and improving student outcomes (Goleman, 2020). This training can include reflective practices, role-playing, and emotional vocabulary instruction to help students develop critical emotional competencies. Policymakers should consider revising teacher education curricula to mandate the inclusion of emotional intelligence development, recognizing its impact on teacher well-being, student engagement, and overall educational success (Mercer and Gkonou, 2017). Policies promoting EI-focused professional development for in-service teachers should also be encouraged to continuously improve teaching effectiveness and emotional awareness in the classroom. These recommendations ensure a holistic approach to language education, integrating emotional and linguistic development for both teachers and students.

Conclusion

This study aimed to investigate the role of emotional vocabulary in fostering emotional intelligence (EI) in pre-service EFL teachers, with a specific focus on the Headway series textbooks. The general objective was to count, categorize, and classify emotion vocabulary across different proficiency levels while using the findings to develop a systematic teaching model for enhancing EI in pre-service teachers. The findings revealed a progressive increase in emotion vocabulary across proficiency levels, with more complex emotions and word classes introduced at higher stages. While positive emotions were more prominent at the beginner level, negative and neutral emotions increased in frequency at advanced stages, supporting the development of self-regulation and empathy.

The findings also have practical implications for teacher training programs. It is recommended that emotional vocabulary and EI development be incorporated into pre-service teacher education, preparing future educators to navigate the emotional complexities of the classroom. Teacher education programs should include specific training modules on emotional intelligence, such as reflective practices, role-playing, and emotional vocabulary instruction. Such training would help pre-service teachers develop key EI skills, including self-awareness, empathy, and emotional regulation, which are essential for maintaining positive classroom environments and improving student engagement.

Despite these valuable insights, several limitations were identified. First, the analysis was restricted to the Headway series, which may not fully represent the diversity of EFL teaching materials used worldwide. Additionally, the study focused primarily on the quantitative aspects of emotional vocabulary without fully exploring the contextual nuances of how these emotions are taught or interpreted by learners. Future research should expand the scope to include other textbook series and incorporate more qualitative analyses that explore how pre-service teachers engage with emotional vocabulary in real-life teaching scenarios.

Future work could also explore the long-term impact of systematic emotional vocabulary instruction on both teacher efficacy and student outcomes, particularly in diverse cultural and linguistic contexts. Moreover, further studies could develop and test emotional intelligence-focused curricula that integrate emotional vocabulary with reflective practices, role-playing, and classroom discussions to assess their effectiveness in fostering EI in pre-service teachers across different teaching environments. Overall, the study underscores the importance of integrating emotional intelligence into language education, suggesting that a more comprehensive approach to emotional vocabulary instruction could enhance both teacher development and student learning outcomes.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the [patients/ participants OR patients/participants legal guardian/ next of kin] was not required to participate in this study in accordance with the national legislation and the institutional requirements.

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Emotional contagion in adult English education: a self-narrative study of teacher–student interactions in Yangshuo County

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This study aims to explore the emotional contagion dynamics between adult English learners and their teacher, focusing on the interplay of positive and negative emotional expressions across different proficiency levels and the pivotal role of learners as emotional initiators in shaping teacher–student interactions. Using a self-narrative study method, qualitative data were collected through interviews, informal exchanges, and reflective teaching logs involving 10 adult English learners at a private language training institution in Yangshuo County, China. As both the teacher and researcher, I captured and analyzed emotional exchanges, identifying three negative emotions: students' anxiety, which triggered self-doubt in the teacher; students' confusion, which led to the teacher's disappointment; and students' discontent, which evoked anger in the teacher. In contrast, two positive emotions were observed among intermediate and advanced learners: students' calm fostering the teacher's tranquility, and students' happiness bringing the teacher relief. The findings challenge traditional assumptions by identifying adult learners as primary initiators of emotional contagion, with teachers often responding to these emotional cues. This study highlights how cultural norms, such as face-saving in China, and institutional pressures reshape teacher–student emotional dynamics. It provides practical implications for emotional regulation, culturally sensitive pedagogy, and the integration of communicative and traditional teaching methods, offering a foundation for future research on emotions in adult language learning contexts.

KEYWORDS

adult English education, emotional contagion, teacher–student interactions, self-narrative, emotional dynamics

1 Introduction

The landscape of English language education in China has undergone significant shifts in recent decades. The 1990s reform era sparked a proliferation of English training institutions across major cities (Haidar and Fang, 2019; Hu, 2005). However, the rise of online resources, accelerated by the COVID-19 pandemic, led to the closure or downsizing of many institutions. This restructuring was further compounded by China's Double Reduction Policy, introduced in 2021, which aims to reduce excessive academic workloads and regulate off-campus tutoring for K-12 students, indirectly impacting the broader tutoring industry (Guo, 2022). Amid these challenges, the language school MD (a pseudonym) in Yangshuo County, Guangxi, demonstrated resilience through its specialized focus on adult English education. Unlike prominent institutions affected by the policy, MD's niche market offered significant advantages. This distinction arises from its emphasis on adult education, fostering distinctive teacher–student interactions that adapt particularly well to policy shifts. Such a

specialized focus warrants attention, as it provides valuable insights into the dynamics of adult English education in China, a field with limited existing research.

Globally, scholars have extensively examined teacher–student dynamics in foreign language education (Smit et al., 2022). Studies on emotions within language education context have explored various themes, including teacher dynamics, peer influences, and the intricate mechanisms underlying positive emotions like enjoyment and happiness (Dewaele and Li, 2021; Moskowitz and Dewaele, 2021; Shao and Parkinson, 2021; Talebzadeh et al., 2020). Despite the wealth of research on emotions in teacher–student relationships (de Ruiter et al., 2021), empirical investigations specifically addressing emotional contagion between teachers and adult students remain scarce, especially in private language schools in China. Moreover, a notable gap emerges as research often overlooks negative emotions, particularly in the context of adult learners and teacher emotional contagion. Understanding negative emotions such as anxiety and frustration in adult education could yield valuable insights for emotional intelligence and pedagogical practices.

2 Literature review

2.1 Adult language learners

Adult learners in this study differ significantly from college students due to their work experience and the practical goals driving their English learning. For many, effective English communication is essential for career advancement or community integration in China (Yu and Liu, 2022). Unlike younger learners, adults rely on their rich life experiences and mature cognitive abilities, which can support their language learning process in unique ways (Bigelow and Schwarz, 2010). However, for adults with a weak foundation in English, these strengths may be counterbalanced by heightened anxiety about making mistakes, which can undermine their confidence and willingness to take risks essential for language acquisition (Griffiths and Slavkov, 2021; Schuetze and Slowey, 2013).

Research on adult learners' motivations reveals their engagement with language programs stems from an intricate interplay of personal and professional aspirations. For instance, Huang (2020) highlighted how enhancing self-efficacy—through success experiences, verbal persuasion, and managing emotional states—can significantly improve adults' learning interest and proficiency. Similarly, Koiso (2003) study of Japanese adult English learners provided a comparative analysis of motivational differences across age and gender, shedding light on the diversity of goals and attitudes in adult learning contexts. Zhu (2019) underscored the role of language learning strategy training in fostering autonomy and sustainability among adult learners, while Ma (2018) evaluated how role-playing methods can enhance English communication skills in professional settings.

Although these studies contribute to understanding adult language learners' motivations and strategies, there remains a noticeable gap in research specifically examining adult English learners in China's unique sociocultural and educational context. In particular, the role of emotional contagion in shaping teacher–student dynamics and influencing adult learners' engagement and their relationships with teachers has yet to be thoroughly investigated.

2.2 Emotion contagion

The role of emotion in foreign language education has gained prominence in recent years, with scholars increasingly recognizing its impact on motivation, engagement, and overall language acquisition (Bielak and Mystkowska-Wiertelak, 2020; Dewaele and Li, 2020; Gregersen et al., 2014; Li et al., 2018; Liu and Fan, 2021; Talebzadeh et al., 2020). Negative emotions like anxiety can hinder learning outcomes, while positive emotions such as pleasure are associated with enhanced performance (Horwitz, 2001; Li and Wei, 2022). Beyond individual emotions, studies have explored the interplay between emotions and motivational trajectories in language learning. For example, Shao et al. (2019) demonstrated how discrete emotions can influence cognitive functioning and task performance, while Pavelescu (2023) explored their relationship with motivation and willingness to communicate. Yu et al. (2022) further highlighted how emotion regulation strategies mediate the link between motivation and burnout.

The emotional experiences of teachers are equally critical, influencing classroom dynamics and teaching effectiveness (Benesch, 2017; Yin et al., 2019). Research into teacher emotions has focused on strategies for regulating anxiety and preventing burnout (Shen, 2022). Studies on novice teachers emphasize their emotional sensitivity and enthusiasm, which can both enrich and challenge the learning environment (Caspersen and Raaen, 2014; Schatz-Opppenheimer and Dvir, 2014). Furthermore, the interplay between emotion management and social bonds has been investigated in the context of early career science teachers, shedding light on the impact of emotion management on teacher–student relationships (Bellocchi, 2019). Understanding the emotional exchanges between teachers and students is vital for supporting teacher wellbeing and fostering positive interactions (Golombek and Doran, 2014).

However, the studies of learner emotions and language teacher emotions seem to be “separate,” and few studies pay attention to the interaction of teacher and student emotions (Fredrickson, 2003). Emotional contagion, defined as the automatic and unconscious transfer of emotions between individuals, has emerged as a key area of interest (Hatfield et al., 2014). This phenomenon plays a significant role in teacher–student interactions. For instance, Talebzadeh et al. (2020) examined how happy emotions were transmitted between Iranian teachers and students through verbal and non-verbal cues, demonstrating the synchronization of behaviors in classroom settings. Similarly, Dewaele and Li's (2021) study of Chinese college learners highlighted how their emotional perceptions of teachers influenced their engagement and classroom experiences.

Despite these insights, several gaps remain in the literature. Existing research tends to focus on positive emotions, overlooking the importance of negative emotional exchanges in shaping the learning environment. Additionally, cultural influences on emotional contagion are underexplored, and learner perspectives are often marginalized in favor of teacher-centered analyses. Furthermore, the dominance of quantitative methods limits a deeper qualitative understanding of emotional experiences. Addressing these gaps through studies like the present one can offer a more nuanced view of emotional contagion in foreign language education.

2.3 Conceptual framework

This study integrates three key theoretical perspectives—Control-Value Theory (CVT), Role Theory, and the concept of face culture in China—to examine the bidirectional emotional contagion between teachers and adult learners in a private language education context. These perspectives collectively provide a multidimensional lens to analyze the emotional dynamics observed in the study.

2.3.1 Control-value theory (CVT)

Control-Value Theory (Pekrun, 2006) posits that emotions in academic settings arise from the interaction of two factors: the individual's perceived control over a task and the value they attribute to it. In this study, CVT will help to explain the emotional dynamics among adult learners. For beginner learners, limited control over learning activities, coupled with high task value (e.g., career advancement), often leads to negative emotions such as anxiety and confusion. Conversely, as learners gain proficiency, their increased sense of control fosters positive emotions like pride and happiness. This theory provides a robust framework for understanding the evolving emotional experiences in adult language learning.

2.3.2 Role theory

Role Theory emphasizes the societal expectations and norms associated with specific roles, such as teacher and student (Biddle, 1986). In the Chinese educational context, these roles are influenced by hierarchical cultural norms, where teachers are traditionally viewed as authority figures. However, adult learners, particularly in private education settings, challenge this dynamic due to their financial investment and professional experience. This tension redefines traditional teacher–student roles, influencing emotional exchanges. For example, discontent is often expressed indirectly, such as through class transfers, reflecting the interplay of cultural expectations and individual agency. Moreover, teachers in this context face the dual challenge of balancing their traditional role as educators with the service-oriented expectations of adult learners, further intensifying emotional labor.

2.3.3 Face culture in China

Face culture, deeply rooted in Chinese society, pertains to maintaining social harmony and preserving one's reputation (Ho, 1976). This cultural dimension significantly shapes teacher–student interactions, particularly in managing emotional exchanges. For example, students may suppress direct criticism of teachers to avoid causing embarrassment, opting instead for subtle strategies like disengagement or withdrawal. Similarly, teachers navigate institutional pressures while striving to maintain their professional “face,” balancing emotional labor and pedagogical objectives. Face-saving behaviors often dictate indirect forms of communication, such as students changing classes rather than confronting their teachers directly, illustrating how cultural norms influence emotional expressions and decisions.

2.3.4 Integration of theories

The integration of CVT, Role Theory, and face culture offers a multidimensional lens for understanding emotional contagion in teacher–student interactions. CVT highlights how learners' perceptions of control and task value influence emotional responses, such as anxiety

from a mismatch between perceived ability and task demands. Role Theory situates these emotions within evolving teacher–student dynamics, where adult learners' life experiences and financial investment challenge traditional hierarchies. Face culture adds a cultural perspective, emphasizing harmony and indirect communication, as seen when students avoid direct criticism to protect their teacher's “face.” Together, these theories illuminate how cultural, societal, and individual factors shape emotional dynamics in adult language education.

This study aims to bridge this gap by conducting a qualitative self-narrative inquiry, collecting data through interviews and informal exchanges with adult English learners. Insights from this study could inform teaching strategies and emotional support mechanisms tailored to the unique needs of adult language learners. The research questions guiding this study are:

- 1 What are the emotional contagion dynamics, including negative and positive exchanges, that emerge between a novice teacher and adult English learners in a private language school setting?
- 2 How do cultural norms (face culture), role expectations, and emotional regulation strategies (within the framework of control-value theory) influence the emotional contagion dynamics between a novice teacher and adult students in the context of Chinese education?

3 Methodology

3.1 Research context

China faces a significant demand for adult English language training, yet the availability of institutions often falls short of meeting this need. Yangshuo County, known for its picturesque karst landscapes and outdoor activities, provides an ideal backdrop for adult learners seeking immersive language experiences. MD, established in 2001 in Yangshuo, Guilin, is a specialized English language institution that integrates language education with the natural beauty of its environment. In addition to English courses, MD offers Chinese language classes for international students, promoting informal language exchanges between international and Chinese students. Conveniently situated in an urban area with accessible transportation, MD had around 60 students and 20 teachers, both Chinese and foreign, in 2021 and 2022, influenced by the pandemic. The institution maintains small class sizes, typically ranging from 5 to 10 students, and provides full-time study opportunities with dormitory and canteen facilities. The author, a 35-year-old university English instructor and doctoral candidate, joined MD as a part-time teacher. While the doctoral research focuses on secondary education and is unrelated to this study, the teaching role at MD offered an opportunity to explore adult English education in a distinctive and immersive context, despite lacking prior experience teaching working adults outside a university setting.

3.2 Research participants

This study is based on my teaching practice at MD, an adult English training school in China, where I worked part-time during my

doctoral studies. MD is one of few full-time English training institutions in China, with students assigned to one of seven proficiency levels. Chinese teachers primarily handle levels 0 to 3, while native English-speaking teachers predominantly teach levels 4 to 6. The 10 participants were selected based on convenience sampling, as they were enrolled in my Level 1 class. After a month of interacting with these students, I noticed a strong emotional dynamic, where I, as a novice teacher, was “infected” by their emotions. This led me to use purposeful sampling to focus on those students who best illustrated the emotional contagion process in the classroom context.

This study focuses on 10 students from my Level 1 class, which I began teaching in May 2021. The class consists of 10 adult learners (see Table 1) with similar proficiency levels, advancing one level every 2 months on average. While I also taught a Level 0 class with three students, the primary focus of this study is on the Level 1 students. The students at MD are working adults, older than typical college students, from diverse professional backgrounds such as foreign trade, programming, and nursing. Studying at this institution for just one or 2 months is often seen as both ineffective and costly. Consequently, most students opt for longer programs of over 10 months, which offer more favorable tuition rates and VIP benefits. However, this commitment comes with significant sacrifices: working individuals often have to quit their jobs, and families are frequently separated from their loved ones for extended periods. In this study, adult English learners described the lengthy deliberations they underwent before committing to study English at this training school, ultimately making the decision to fully dedicate themselves to their language learning journey. One student shared that he had been contacted by the school’s sales representative 2 years prior to enrolling. After much consideration, he decided to leave his position as a car sales representative to pursue English studies.

Wei Ying (a pseudonym), a 33-year-old photographer, was chosen as the main participant due to our frequent and meaningful interactions both inside and outside of class. Sharing similar ages and interests, our regular communication provided valuable insights into the emotional experiences and challenges faced by adult learners. Although my Level 1 class was diverse in terms of age, profession, and educational background, Wei Ying was selected as the primary subject because of his unique interactions with me and his role in illustrating

the emotional contagion process. Wei Ying’s active participation in class also made him a key example of the emotional dynamics between teacher and student in this context. This purposeful selection aligns with the qualitative approach, which emphasizes in-depth, meaningful interactions rather than generalizable trends.

3.3 Research method

This study uses a qualitative case study design and adopts a self-narrative research framework to explore the evolving emotional interactions between teachers and students in adult English education. The self-narrative approach is particularly suitable for studying emotion contagion, as it enables the researcher to reflect on personal experiences, emotional responses, and their influence within the teacher–student dynamic (Hayler, 2012). This method allows for an in-depth examination of emotional cues, the triggers of emotions, and their perceived effects on the language learning process. By using self-narrative, the researcher can gain a rich, subjective understanding of how emotions flow between teacher and students, which is crucial in exploring emotional contagion in the classroom context (Kennedy-Lewis, 2012).

The choice of self-narrative is justified for this study due to its unique ability to capture the subjective nature of emotional experiences, particularly in adult language learning settings where personal interaction and emotional exchange are central to the learning process. It offers an insider’s perspective, thus providing valuable insights into the emotional dynamics of the teaching-learning relationship. In addition, the approach facilitates a nuanced understanding of the emotional changes that occur over time, as the researcher can analyze how emotional experiences are triggered, modified, and shared between teacher and students.

To ensure rigor, this study employs triangulation to strengthen the validity of the findings. Data collection spanned from May 2021 to March 2022, using multiple sources of evidence: (1) informal communication with adult students, (2) semi-structured interviews with students, and (3) teaching logs and reflections. The semi-structured interview aimed to explore participants’ experiences studying English at the training institution. The primary question posed was: “Can you talk about your experiences studying English here?” This open-ended question encouraged participants to share their thoughts, emotions, and reflections freely, providing rich qualitative data. Teaching reflection logs were written intermittently, focusing on moments when the teacher/researcher experienced strong emotional responses or gained significant insights about classroom interactions. These reflections were not recorded daily but were prompted by impactful teaching experiences, notable emotional exchanges with students, or moments of personal growth. These varied data sources provide a comprehensive view of the emotional exchanges in the classroom, supporting the validity of the study’s conclusions (Cohen et al., 2017). Data was analyzed through thematic analysis, with the NVivo qualitative software aiding in the categorization and analysis of emotional expressions. By triangulating these diverse data sources, the study enhances the depth and reliability of its findings.

The use of self-narrative as a method is in line with ethical research practices, as it allows for a reflective, transparent, and responsible examination of personal emotional experiences, while

TABLE 1 Background of research participants.

Number	Sex	Age	Occupation	Comes from
S1	Female	32	Full-time mother	Guangdong
S2	Female	35	Full-time mother	Guangdong
S3	Male	47	Freelancer	Guangdong
S4	Female	26	French translator	Guangdong
S5	Female	37	Full-time mother	Guangdong
S6	Male	30	Unemployed	Shanghai
S7	Male	33	Skiing instructor	Jilin
S8	Male	36	Unemployed	Hunan
S9	Female	35	Unemployed	Beijing
Wei Ying	Male	33	Photographer	Beijing

“Unemployed” participants were either in career transitions or temporarily not working during the study.

minimizing the risk of harm or bias (Ellis et al., 2011). Ethical approval for this study was obtained from the relevant institutional review board, ensuring that all participant interactions were conducted in accordance with ethical guidelines. Informed consent was obtained from all participants, and confidentiality was maintained throughout the study. Participants were fully informed of their right to withdraw from the study at any time without penalty, ensuring voluntary participation. Feedback on the findings was provided to all participants after completion of the study.

3.4 Data analysis

This study employed a combined approach of thematic and narrative analysis to explore the emotional experiences in adult English education. Thematic analysis identified recurring themes in the narratives, revealing patterns of emotional expression, while narrative analysis examined how individuals construct meaning through their stories.

To ensure reliability, I analyzed qualitative data collected through interviews, informal communications, and teaching logs using NVivo software. A coding scheme was developed based on the research questions and key emotional constructs, such as anxiety, confusion, and emotional regulation. One participant's data was initially coded to test the framework and ensure consistency. Emotional expressions were coded under corresponding categories (e.g., “anxiety,” “confusion,” “calm”) and reviewed iteratively to refine the scheme and ensure alignment with the theoretical frameworks.

The coded data were organized into broader themes using NVivo's thematic analysis tools. Recurrent patterns and comments, such as the tension between teaching methods and learner preferences, were categorized under themes like “discontent” or “happiness.” Using a naturalistic, inductive approach, themes were arranged from general emotional dynamics to specific subcategories (e.g., anxiety at the beginner level vs. calm at intermediate level). These themes are presented systematically in the findings section, with each theme supported by illustrative quotes and examples to demonstrate how they emerged from the data.

Finally, narrative analysis mapped emotional trajectories in teacher–student interactions, highlighting key emotional turning points and their impact on teaching strategies. The findings are organized to emphasize the interplay between teacher and student emotions, showing how specific emotional episodes contributed to broader patterns. This dual approach ensured both methodological rigor and depth in understanding emotional contagion in adult English education, while also enabling a clear presentation of the data to capture the complexity of the emotional dynamics observed.

4 Findings

Thematic analysis identified five distinct emotional dynamics in teacher–student interactions: anxiety and self-doubt, confusion and disappointment, discontent and anger, calm and tranquility, and happiness and relief. Students' emotions come first, followed by teachers' emotions, a process that aligns with the definition of emotional contagion—“the tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with

those of another person, and consequently, to converge emotionally” (Hatfield et al., 1993).

Both teachers and students are emotional initiators and receivers, influencing and “infecting” each other in traditional Chinese secondary schools. However, in the adult education context of this study, the dynamic shifts: teachers, aiming to maintain good relationships with students, often become the recipients of emotions. The diagram below (Figure 1) illustrates the five emotional dynamics observed in teacher–student interactions, highlighting how emotions initiated by students influence corresponding emotional responses in teachers. Blue represents students' emotions, while orange represents the teacher's emotions.

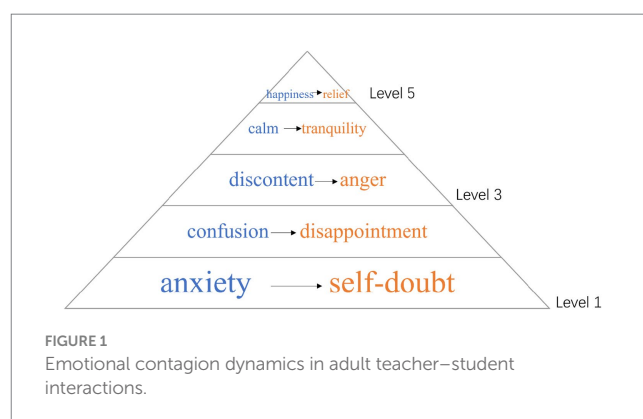
Section 4.1 focuses initially on the negative emotional dynamics— anxiety and self-doubt, confusion and disappointment, and discontent and anger—primarily observed among beginner learners, examining their impact on teacher–student interactions. Section 4.2 shifts to explore the roles of teachers and students in these exchanges and discusses the two positive emotional dynamics—calm and tranquility, and happiness and relief—which emerge as learners progress to intermediate or advanced levels.

4.1 Muted resistance: tracing the emotional origins of students' requests for class transfer

This section examines the emotional exchanges between a novice teacher and adult learners through three key dynamics: anxiety and self-doubt, confusion and disappointment, and discontent and anger.

4.1.1 Students' anxiety and the teacher's self-doubt

All my adult students in the level one class expressed discomfort, nervousness, and anxiety during their English studies. Balancing family responsibilities and demanding work schedules left them with little time to dedicate to learning, often leading to feelings of inadequacy and frustration. This anxiety was particularly pronounced among learners with weak foundational skills in English, who struggled with even basic tasks and expressed doubts about their ability to improve. These emotional struggles directly “infected” the novice teacher (myself), as I often felt overwhelmed by their visible discomfort and doubted my ability to meet their expectations or provide effective support. One adult learner described her frustration and anxiety:



"I am a mother of two children. Now my son is five, and my daughter is four. Before I came to MD, I was a stay-at-home mother. So far, I am not satisfied with my English level." (S2).

This anxiety was amplified by their high self-expectations and the perception of slow progress. Another learner shared her experience of repeated efforts yielding minimal improvement:

"I asked my classmates about the meaning of a certain word during class, and I found that the teacher had just talked about this word yesterday. It felt like a sharp weapon for killing people; it would make me uncomfortable." (S3).

Wei Ying's anxiety about memorizing vocabulary exemplified the tension many learners felt. He lamented:

"Teacher, I always have trouble remembering words and forget them after memorizing them. What should I do? Is there any way to memorize words quickly? Schools should devise a way to memorize words quickly so they can compete in the marketplace."

In our conversations, I suggested mnemonic techniques, such as associating English words with Chinese homophonics. For instance, I proposed using "pregnant" as "pu le ge gen tou" (Pinyin, literally meaning "took a tumble") and "ambulance" as "an bu. neng si" (Pinyin, literally meaning "I cannot die"). Wei Ying initially agreed and experimented with these methods. Later, we discussed software options for memorizing words, and he suggested that schools adopt multimedia devices for more effective learning. He commented:

"In this day and age, schools are so backward that they should use multimedia devices. In this way, we can use software to memorize words much more effectively."

However, I later realized that Wei Ying's feedback contained an implicit critique of my teaching methods. During one conversation, he excitedly shared his experience of attending a foreign teacher's elective course:

"The foreign teacher used pictures to teach us food words. I still remember."

This indirect comparison highlighted his dissatisfaction and anxiety with my vocabulary instruction. In response, I explained my reasoning:

"Foreign teachers teach you once, but I have to catch up with the progress. Otherwise, how can I finish the textbook?"

Despite this explanation, Wei Ying's anxiety persisted. During a casual conversation with classmates, he remarked:

"When I was a child, my English teacher used Chinese to teach English, such as 'pregnant' or 'education' ('ai jiu kai xin' in Pinyin, literally meaning 'love is happy'). This Chinese memory method has hurt me for a lifetime."

Hearing this, I felt a mix of frustration and self-doubt. Reflecting on these exchanges, I began questioning whether my

approach—focused on structured lesson plans—aligned with student expectations.

"No method works. You still have to memorize it by rote," I told him eventually.

Anxiety among learners stemmed from unmet expectations, perceived inefficiencies in learning methods, and frustrations with progress. This incident with Wei Ying led me to reconsider my teaching strategies, prompting a balance between creative and traditional approaches, such as incorporating more direct vocabulary instruction.

4.1.2 Students' confusion and the teacher's disappointment

The emotional dynamic between students and the teacher often revealed a pattern where students' emotional states directly influenced the novice teacher's feelings. Specifically, learners' confusion—rooted in uncertainties about their goals or learning methods—frequently triggered feelings of disappointment in the teacher. This emotional state was particularly prevalent among those navigating significant life transitions. For example:

"I face many new starts, new challenges, and do not know where to go." (S4).

Housewives and professionals alike articulated the tension between their aspirations and current realities:

"As a mother, I have also experienced the confusion of all stay-at-home mothers. How to take good care of your children and at the same time keep learning without being eliminated by society? How can we continue to realize our former ideals and wishes?" (S2).

"I have been a housewife for four years. After my children went to school, I became confused and did not know what I should do or what I could do. I think financial independence is important for any woman." (S5).

In the classroom, confusion often surfaced in requests for clearer instruction. Wei Ying's plea underscored the frustration many students felt:

"Teacher, please teach us grammar, because we do not know whether what we say is wrong or right."

Initially hesitant, I decided to teach grammar explicitly. I drew a table of 12 tenses on the board, explaining how to remember them systematically. After class, Wei Ying expressed his relief:

"It turns out that tense is time and state. After hearing what you said, I suddenly became enlightened."

However, confusion resurfaced as Wei Ying struggled with the nuances of grammar rules, such as the distinction between past simple and present perfect tenses:

"When to use the past simple tense and the present perfect tense? There is no clear line."

This ongoing confusion mirrored a broader challenge among students, who often skipped morning and evening self-study sessions. Reflecting on this, I noted in my journal:

“Sad, (they) do not arrive on time for morning and evening self-study, do not come, do not study hard, do not read or memorize.”

Learning English as a body of knowledge seems to be ingrained in the habits of Chinese learners. They often expect to acquire concrete knowledge in class, whether it involves new vocabulary or grammar rules. In my class, I incorporated many activities, but this sometimes left students feeling they had “gained nothing” after class. While they found the class interesting and fun, they felt that they had not truly learned anything substantial. This reaction could be attributed to their confusion about making rapid progress or to their deeply rooted learning habits developed over many years in the Chinese education system. One of my students expressed confusion after attending a native English-speaking teacher’s class, saying, *“The foreign teacher just let us go to the street and talk to foreigners in English.”*

The learners’ confusion resonates with existing research on emotional contagion in adult learning, highlighting the tension between extrinsic motivations, such as career advancement, and intrinsic uncertainties about learning goals or methods. This emotional ambivalence was particularly evident among learners undergoing significant life transitions, where their need for clear guidance often clashed with feelings of disorientation regarding their progress or approach to learning. Many were uncertain about whether to adopt traditional or activity-based learning methods, reflecting a broader struggle between familiar habits and new approaches. Additionally, confusion arose over their preference for Chinese native-speaking teachers or English native-speaking teachers. Chinese teachers, often likened to coaches, guided students through repeated text reading, requiring little active English speaking in class. By contrast, English native-speaking teachers encouraged more spontaneous interaction, which some learners found disorienting or unproductive. I, as a novice teacher, teach them like an English native-speaking teacher due to my teaching philosophy.

4.1.3 Students’ discontent and the teacher’s anger

Students’ discontent in this study arose from a mismatch between their expectations and the teacher’s chosen teaching methods or pace of instruction. This discontent, often conveyed through non-verbal cues—such as the class transfer incident highlighted in this study—triggered feelings of anger in the novice teacher. The class transfer event involved three students, who requested to leave my class and be reassigned elsewhere. This initially left me confused and then angry. I had no knowledge of the transfer until my director asked me to meet him in his office. When I inquired about their reasons for transferring, S6 offered a self-deprecating explanation:

“We might just be that local dish.” (S6).

The term “local dish” metaphorically reflected S6’s feelings of inadequacy and struggle to keep up with the pace of learning. This feedback was both humbling and revealing. S6 also clarified:

“I do not want to change your teaching methods because you are professional. First, I do not really want to learn phonetics. That’s the first thing. Second, I do not think your teaching style is bad; it’s just that I struggle to keep up. We all know you are very skilled, absolutely top-notch, but it’s just that we are not as proficient.”

While this reassured me about my professionalism, it also highlighted the gap between my instructional approach and the students’ readiness or preferences.

Another incident involved frustrations with the “activity-centered” teaching method I implemented. My aim was to focus on communicative skills by designing activities such as role-playing, rapid-fire questions, and improvisations. However, students at an elementary level often found these tasks too demanding. This mismatch led to my growing anger:

“In fact, this (designing and organizing these activities) makes very tired, and because they do not study after class, do not memorize the assigned things, and do not complete the activities in class.”

In response to this feedback, I sought guidance from the head of the teaching department. The director suggested that I observe other Chinese teachers’ classes and try to adjust my own. After struggling with the situation, I finally decided to change my teaching approach and wrote a message to Wei Ying to ask for his opinions:

“The activity-centered teaching concept seems not suitable for everyone. First, everyone’s consciousness is not high. The assigned tasks are not done, and what should be memorized is not memorized. As a result, the activities are not thorough and there may be no achievements. Second, due to low self-awareness, the level cannot be improved, the activities are not thorough, and there is no sense of gain. The third is that adults are still used to ‘harvesting’ certain knowledge, such as vocabulary and grammar. The new teaching method will be knowledge-centered and return to the traditional PPP model. First, teach new words, new grammar, and new knowledge points, practice vocabulary by making sentences or dialogues, and do homework.”

Wei Ying’s response further emphasized the need for more organized and beginner-friendly instruction:

“Everyone hopes to capture more knowledge in a shorter period. Perhaps it is because we are too lazy to memorize words, rather than an instructional design problem. Because the foundation is too poor, we cannot capture more knowledge in games or activities. Information, unable to participate. The activity is very particular about participation. If I cannot participate, there is nothing I can do. Maybe our foundation is too poor.”

This dialog with Wei Ying reinforced my decision to adapt my teaching strategies. I realized that while activity-based methods work well for advanced learners, elementary-level students often benefit more from structured, incremental learning approaches. Consequently, I shifted to a PPP (Presentation, Practice, Production) model to better align with student needs.

The emotional toll of these adjustments was significant. At times, I felt frustrated and unappreciated, particularly when students did not

follow through with self-study or homework assignments. However, these experiences also taught me valuable lessons about flexibility and the importance of meeting students where they are in their learning journey.

Reflecting on these events, I documented in my teaching journal:

“The activity-centered approach, while theoretically sound, does not align well with the needs of students who lack foundational skills or intrinsic motivation. Moving forward, I will prioritize a hybrid approach that combines structured lessons with manageable activities to ensure progress without overwhelming learners.”

All 10 students I taught exhibited similar emotions to varying degrees simultaneously. Among them, the emotions of “confusion and disappointment” were particularly prominent, with Wei standing out as the most notable. In “discontent and anger,” the emotions of three students, led by S6, were especially striking. These shared emotional expressions were verified through multiple sources. For instance, after the class transfer incident, I approached Wei for confirmation. This is one of the reasons why this study uses Wei as the central focus. As their English proficiency improved—for example, advancing from Level 1 to Level 3—their negative emotions gradually diminished, while their positive emotions steadily increased.

4.2 Getting better: the growth trajectory of the teacher and students

Over the course of the study, the dynamics between the teacher and students shifted from frustration and self-doubt to mutual growth and emotional resilience. This transformation highlights how emotional exchanges in the classroom can evolve alongside improved academic performance and personal confidence.

4.2.1 Students' calm and the teacher's tranquility

For many adult learners, mastering English is a lengthy and demanding process, yet their persistence often yields noticeable progress. As my students gradually cultivated a sense of calm and determination in their learning journey, this emotional state often transferred to me as their teacher, fostering a shared sense of tranquility in our interactions. As one student, S8, reflected during an informal conversation, “You cannot rush to learn English.” This sentiment resonated with many others in the class, who began consoling each other with similar words of encouragement as their confidence grew. After 4 months, most students had advanced to Level 3, a milestone that brought a sense of accomplishment. As S10 shared, “Now, I have become more and more familiar with foreign students, and I dare to chat casually. Although the topics are not rich because of my limited vocabulary, I know that one day I will be able to chat as much as I want.”

The growth of my students was accompanied by my own development as a teacher. Initially, I struggled with self-doubt and frustration, often questioning whether my communicative, activity-centered teaching methods were appropriate for adult learners with weak foundations. Through reflection and adaptation, I gradually shifted toward a knowledge-centered approach. In my teaching diary, I wrote, “I have resolved the contradiction between the communicative teaching philosophy I uphold and the basic and actual needs of students, making a compromise between ideals and reality.” This change involved

integrating more focused instruction on key vocabulary and grammar, supported by authentic materials and structured tasks like weekly dictations and grammar explanations.

Wei Ying, one of the students, embodied this sense of calm and determination. Initially overwhelmed by the difficulties of memorizing vocabulary, he chose to persevere through rote memorization. “Sometimes I would spend five hours memorizing 70 words. After 2–3 months, my word memorization notebook was almost 5 cm thick. I was able to communicate with foreigners using individual or multiple words, which gave me a great sense of accomplishment,” he shared during an interview. This persistence eventually gave him the confidence to participate in a school speech competition. As he recalled, “Just before my speech, when I was extremely nervous, the encouraging look teacher Melissa gave me immediately calmed me down. At the moment I won the prize, teacher Maria told me: ‘Great job, I’m so proud of you!’ The joy and excitement in my heart are indescribable.”

4.2.2 Students' happiness and the teacher's relief

In the latter stages of the study, the classroom atmosphere was characterized by a shared sense of happiness and relief. As students began to experience the rewards of their hard work and progress, their joy became contagious, alleviating the teacher's earlier feelings of pressure and fostering a mutual sense of accomplishment and ease. S2 noted, “Every Thursday there will be free discussions, singing, guessing words, and all kinds of social activities. By participating in these activities, I can not only meet many interesting people but also improve my social skills.” Similarly, S7 reflected, “Through memorizing words every day and communicating with foreign teachers, I can now freely communicate with foreigners and even joke with them, truly integrating English into my life.”

For some students, the recognition of their efforts provided additional motivation. S9 vividly described their reaction upon being named an “Excellent Summer Class Teaching Assistant,” which came with 3 weeks of free classes: “When I learned about this news, I felt like I had won the lottery and was happy for a long time.” Such moments reinforced the connection between external validation and internal growth, driving students to continue striving toward their goals.

As a teacher, I found immense joy and relief in witnessing my students' achievements. One particularly memorable moment came when Wei Ying advanced to Level 5. He messaged me to share the news, and I wrote in my diary, “Adult English teachers must think in others' shoes and put themselves in the position of beginners from time to time. Beginners need encouragement, motivation, and a sense of accomplishment.”

This mutual growth between teacher and students underscores the transformative potential of adult English education. As students gained confidence and skills, I also evolved as an educator, learning to balance the demands of teaching with the emotional needs of my learners.

5 Discussion and implications

5.1 Adult English learners as initiators of emotional contagion: insights from control-value theory

This study explores the bidirectional emotional contagion between a novice teacher and adult English learners across proficiency levels in a private language learning context, with teachers assuming recipient

roles. Specifically, lower-level adult learners tended to experience anxiety and confusion due to the gap between their motivations and actual English ability. Their negative emotions were expressed through behaviors perceived by the teacher, subsequently influencing the teacher's emotions. As students progressed to higher proficiency levels, their emotional experiences generally grew more positively due to improving language skills and relationships. The emergence of emotions like pride and joy related to achievement and belonging illustrates the intricacies of adult learning motivations rooted in practical goals like career advancement (Bigelow and Schwarz, 2010). Thus, the evolving learners' emotions over time reciprocally shaped the novice teacher's emotional trajectory.

Teachers in private educational institutions often occupy relatively disadvantaged positions compared to public education contexts. Private training schools prioritize student satisfaction and institutional reputation, as these factors directly impact enrollment rates and subscription renewals. When interacting with students, instructors in such training facilities unconsciously adopt additional roles beyond traditional teaching duties. That is, teachers simultaneously serve as educators delivering knowledge while attentively monitoring the emotions of their pupil audience in their capacity as service providers. This complex interplay between student emotions and teacher duties provides crucial context for elucidating the emotional contagion processes that transpire between instructors and adult English learners.

Previous research has primarily focused on the impact of teachers on students' emotions (Moskowitz and Dewaele, 2021), with less emphasis on the influence of students on teachers. This study reveals that in adult English education, due to changes in the teacher–student relationship, students are more likely to be initiators of emotional contagion, while teachers become recipients. According to the cognition-arousal theory, emotions are the integrated result of environmental factors, cognitive processes, and physiological states in the cerebral cortex (Reisenzein, 1983). For novice learners, the incongruity between strong motivation and weak English foundations can lead to negative emotions such as anxiety and confusion. These negative emotions not only adversely affect the students' English learning (Horwitz, 2001), but also influence the teacher's emotions. The mainstream mechanism in emotional contagion, the imitation-feedback mechanism, posits that people tend to imitate others' emotional expressions, including facial expressions, intonation, posture, and gestures (Hatfield et al., 2014).

The CVT of academic emotions (Pekrun, 2006) provides a critical framework for understanding these dynamics. CVT posits that emotions in educational contexts arise from the interaction between individuals' perceived control over learning activities and the value they place on these activities. In this study, adult learners' strong motivation to achieve practical goals, such as career advancement or studying abroad, reflects high task value. However, their weak foundational skills often diminish their perceived control, resulting in anxiety and confusion, particularly at lower proficiency levels. These negative emotions align with Pekrun's (2006) assertion that low control combined with high value generates adverse emotional states, which can impede learning and motivation.

In this adult English training institution, most students range between 25 and 45 years old with professional experience. These adults pursue English training for diverse career goals and hold high expectations for teachers. After investing significant financial and time costs, adult English learners hope to improve their English proficiency

quickly, achieve the advertised learning outcomes, and thereby “find better employment” or “study abroad by passing exams.” The control-value theory explains that when learners experience a discrepancy between their expectations and their actual progress, they are more likely to feel a lack of control, leading to anxiety or frustration. Teachers perceive these emotions through classroom interactions, further emphasizing the bidirectional nature of emotional contagion.

Over time, as students' proficiency improves, they gain greater perceived control over their learning outcomes, fostering positive emotions like pride and joy. For instance, students expressed pride when correctly answering questions or participating in speech competitions. These positive emotional shifts align with the CVT's proposition that increased control enhances enjoyment and achievement-related pride (Pekrun and Perry, 2014). Students also regulate their emotions by reassessing their knowledge and learning states, reducing the impact of negative emotions through cognitive reappraisal (Gross, 2002). For example, as students built stronger relationships with peers and teachers, they reported feeling a “sense of home,” which contributed to their emotional stability and motivation.

5.2 Emotional labor of adult English teachers: navigating challenges and managing emotional dynamics

Emotional labor refers to the process of managing emotions and expressions to meet emotional requirements in the workplace (Hochschild, 2010). For English teachers, emotional labor involves the emotional regulation behaviors and discourse practices carried out to reconcile conflicts between rules, ideologies, and practices (Benesch, 2020). The emotional labor of English teachers is influenced by various factors, such as power relations in schools or institutions, their teaching philosophies, and relationships with students (Benesch, 2017, 2018). This study also found that the teacher used two emotion regulation strategies: reappraisal and suppression (Gross, 2002). Gross concluded that reappraisal is more effective emotionally, cognitively, and socially than suppression, but in some cases, suppression may be more necessary. The importance of flexibly using multiple emotion regulation strategies to adapt to different situational needs is emphasized. Genuinely expressing, as proposed by Yin (2016) in Chinese educational settings, was not observed in this study. In the adult education environment, influenced by factors such as role expectations and the teacher's role as a service provider, the power relationship between teachers and students has shifted. Genuinely expressing may harm students and negatively affect the relationship.

In adult English training institutions, there are usually assessment requirements imposed on teachers by the institutions. Besides fulfilling daily teaching tasks, teachers are also expected to complete other tasks mandated by the institution. Both these responsibilities affect teacher assessments and performance, consuming a significant portion of an English teacher's time. As a teacher new to the training industry, I experienced a conflict between my teaching philosophy and student needs, leading to emotional labor. Based on the school's educational philosophy and the courses taught, I believed in using communicative teaching methods and designing various activities to enhance students' listening and speaking skills. However, the implementation of communicative teaching faced major challenges, including the traditional teacher-centered educational culture,

relatively passive learning methods, and exam-oriented approaches. These challenges align with Hochschild's (2010) concept of surface acting, where teachers suppress their authentic emotions to meet institutional expectations and present a professional demeanor.

Rao (1996) suggests combining traditional teaching methods, such as the audio-lingual method and grammar-translation method, with communicative teaching methods, avoiding an either-or approach. In this study, communicative teaching methods were found to be unsuitable for some novice learners who "pursued language knowledge." This mismatch between my teaching philosophy and the learners' preferences required deep acting—an effort to align my internal feelings with externally displayed emotions (Hochschild, 2010). For instance, while I was frustrated after investing significant effort with only partial student engagement, I sought to empathize with the learners' perspectives and adjust my methods accordingly. Despite changing textbooks and teaching methods after the incident, I did so reluctantly, undergoing inner struggles and compromises.

Emotion regulation strategies also played a crucial role in managing emotional labor. Gross's (2002) framework of emotion regulation highlights strategies such as cognitive reappraisal and suppression. Cognitive reappraisal involves reframing situations to reduce their emotional impact, which I employed by viewing student feedback as constructive rather than personally critical. For example, a student's comment about preferring grammar-focused lessons over activities pushed me to rethink the balance between communicative and traditional methods. Suppression, on the other hand, was evident in interactions where I concealed frustration and maintained a supportive demeanor, as encouraged by institutional expectations (Richards, 2022).

Although teachers are encouraged to display positive emotions, such as enthusiasm and patience, while suppressing negative ones, this can create internal tension (de Ruiter et al., 2021; Richards, 2022). Emotional labor requires balancing these expectations with authentic emotional experiences. In my case, the tension between my idealized teaching philosophy and the pragmatic needs of students highlighted the complexity of emotional labor in adult education. While moments of frustration and disappointment were inevitable, they were counterbalanced by the intrinsic rewards of teaching, such as fostering student confidence and witnessing their growth.

5.3 Teacher–student relationships in adult education: emotional dynamics and shifting norms

The teacher–student relationship in traditional Chinese education is heavily influenced by cultural and systemic factors, resulting in a hierarchical structure where teachers hold authority and students are expected to exhibit obedience. Scholars in the field argue that this hierarchy is maintained to ensure discipline and uphold the teacher's authority in the classroom (Rao and Chen, 2020). Although efforts to foster harmonious relationships have improved the dynamic (Liu, 2015), the power distance created by this hierarchy remains stable (Murray et al., 2020). The Chinese education system, characterized by the exam-oriented approach, large class sizes, and Confucian values, reinforces this unequal relationship (Lyu, 2021; Ma, 2021). These factors collectively shape the authority-obedience dynamic that is deeply ingrained in traditional school settings, such as secondary education.

In contrast, the context of adult education, as explored in this study, diverges significantly from these traditional norms. Adult education schools typically lack the exam pressures that dominate traditional educational settings. Smaller class sizes and the closer age proximity between teachers and students further dilute the traditional power hierarchy. In this study, the "authority-obedience" relationship was challenging to enforce, as students did not conform to expected behaviors, such as memorizing vocabulary or attending evening self-study sessions on time. As a new teacher and head teacher, I often found myself feeling helpless when students disregarded instructions that would have been readily followed in a traditional school environment.

The shift in the teacher–student relationship is also influenced by the changing roles and expectations in adult education. Unlike traditional settings, where teachers are primarily authority figures, teachers in adult education often assume roles akin to service providers. Adult learners, as fee-paying clients, possess a certain level of influence over the teacher's career survival. Students' opinions can directly impact on institutional evaluations of teachers, as supervisors are quick to address complaints or feedback. For instance, in this study, after three students changed classes, the school supervisor immediately sought a discussion with me, creating a sense of unease and self-doubt about my teaching practices. This dynamic underscores a significant shift: teachers in adult education settings must navigate a dual role of educator and service provider, balancing professional expectations with the need to meet student demands.

In traditional Chinese primary and secondary school classrooms, teachers are generally in a dominant position, and their language and behavior often have a significant impact on students' emotions. Both teachers and students are emotional initiators and receivers, influencing and "infecting" each other. However, in the adult education context of this study, the dynamic shifts: teachers, aiming to maintain good relationships with students, often become the recipients of emotions. From the fact that adult students are "uncooperative" (not studying as required by the teacher) and that teachers avoid using the common "pretending to be angry" strategy seen in primary and secondary schools, it is clear that teachers in this context tend to avoid influencing students' behavior through negative emotions. According to the control-value theory, adult students, having invested significant time and money in learning English, express their emotions more obviously and urgently as beginners. As a result, in the adult education environment, influenced by factors such as role expectations and the teacher's position as a service provider, the power relationship between teachers and students has shifted slightly compared to traditional secondary school classrooms. Teachers are more likely to become the recipients of students' emotional contagion, a phenomenon where students' emotions come first, followed by teachers' emotions. Conversely, adult students exhibit unique behaviors that differ from traditional students. Despite their confusion and discontent with a teacher's approach, they often avoid direct confrontation or complaints to supervisors, likely influenced by Chinese cultural norms such as face-saving. Instead, students in this study tended to transfer classes quietly, using this as an indirect strategy to address their discontent.

The teacher–student relationship in adult education significantly impacts teachers' emotions, shaping their experiences of emotional labor. As demonstrated in this study, the quality of teacher–student interactions often influenced my emotional state. For example, when

students expressed negative emotions such as anxiety or confusion, I experienced corresponding feelings of self-doubt and frustration. On the other hand, moments of student success, such as their progress in English proficiency or achievements in activities like speech competitions, elicited positive emotions such as pride and fulfillment. These emotional exchanges align with the concept of true emotional expression (Hochschild, 2010), where teachers genuinely share positive emotions stemming from students' accomplishments. However, the dual role of educator and service provider compounded the emotional labor, requiring careful management of my emotional responses to maintain professionalism and meet institutional expectations. This highlights the intricate relationship between emotional labor and the evolving teacher–student dynamic in adult education setting.

5.4 Implications and limitations

This study highlights the importance of teachers being prepared to address the negative emotions expressed by adult English learners. Teachers can use successful student cases to motivate others, help learners understand the challenges of foreign language learning, encourage perseverance, and discourage unrealistic expectations of rapid success. Inherent learning habits and methods of adult learners, such as using Chinese associations for word memorization, should not be indiscriminately criticized or dismissed. These methods have both advantages and disadvantages, and teachers should encourage learners to compare new and traditional approaches, empowering them to find what works best. By understanding the interplay of control and value, teachers can provide targeted support, fostering both emotional stability and academic growth in adult learners.

The findings further suggest that teachers play a pivotal role in shaping learners' perceptions of control and value. Effective teaching strategies, such as recognizing and celebrating students' efforts, providing relatable examples, and creating structured learning environments, can significantly enhance learners' sense of control. For instance, integrating explicit grammar instruction alleviated learners' confusion in this study, supporting Pekrun's (2006) argument that clear and structured guidance bolsters perceived control and mitigates negative emotions. By cultivating positive emotional experiences, teachers can inspire persistence and resilience in adult learners, fostering a productive learning environment.

Additionally, teachers should strive to balance the traditional knowledge-centric needs of adult novice learners with communicative teaching methods. Classroom activities should be engaging yet manageable, designed to build confidence without overwhelming learners. Teachers should also develop emotional regulation strategies to effectively manage the challenges of emotional labor, such as conflicting teaching philosophies or tense student relationships. Strategies like cognitive reappraisal, empathy, and reflective practice can help teachers navigate these challenges while promoting positive emotional interactions. By integrating these approaches, educators can address the complexities of emotional labor, enhancing the overall effectiveness and harmony of the learning environment.

While this study provides valuable insights into the emotional dynamics between teachers and adult English learners, several limitations should be noted. First, the study relies on qualitative data from a single private language training institution, limiting the

generalizability of the findings to other contexts or educational settings. Second, the self-narrative methodology introduces potential biases, as the teacher-researcher's perspectives may influence data interpretation. Third, the sample size of 10 adult learners, though sufficient for qualitative inquiry, restricts the breadth of perspectives represented. Future research could address these limitations by incorporating longitudinal designs, larger sample sizes, and comparative analyses across different educational contexts to provide a more comprehensive understanding of emotional contagion in adult language education.

6 Conclusion

The concept of emotional contagion, as established by Hatfield et al. (1993), frames emotions as a process of automatic mimicry and synchronization that leads to emotional convergence between individuals. While this framework has encouraged extensive research on emotional dynamics in educational settings, it also highlights the need for more empirical studies exploring the complexities of cultural, institutional, and role-specific factors in shaping emotional contagion. The complexity and particularity inherent to qualitative research often make such studies difficult to undertake. However, the unique context of this study offers a rare and valuable opportunity to investigate emotional contagion in depth.

This study reexamines traditional assumptions by highlighting the pivotal role of adult learners as emotional initiators in shaping teacher–student emotional dynamics. In the context of traditional Chinese primary and secondary school classrooms, teachers typically occupy a dominant position, with their language and behavior significantly influencing students' emotions. Both teachers and students act as emotional initiators and receivers, mutually “infecting” each other. However, in the adult education context of this study, the dynamic shifts dramatically. As a novice teacher without prior experience teaching adults, I found myself particularly susceptible to emotional contagion. Students' emotions, such as anxiety, confusion, or discontent, often “infected” me, intensifying my self-doubt, disappointment, or anger. This heightened sensitivity was exacerbated by factors such as cultural norms that discourage overtly negative emotional displays, institutional pressures to maintain positive teacher–student relationships, and the avoidance of strategies like “pretending to be angry,” which are common in primary and secondary school teaching.

Within the context of a private language training institution in China, the findings reveal how adult learners—motivated by career advancement, personal growth, and high expectations—subtly initiate emotional exchanges through culturally embedded behaviors influenced by norms such as “face-saving.” These emotions, both positive and negative, are frequently understated but have a significant impact on teacher behavior, emotional regulation, and pedagogical strategies. For the novice teacher in this study, this creates a dual burden of emotional labor and self-regulation as they navigate institutional pressures and student expectations while simultaneously refining their teaching practices through reflective teaching logs as a method of reappraisal.

Looking forward, these findings have broader implications for the field of emotional contagion and adult education. By situating emotional contagion within the specific cultural and institutional

context of private language training in China, this study not only expands the theoretical scope of the concept but also provides actionable insights for educators and researchers. Teachers can draw on strategies such as sharing success stories, promoting perseverance, and tailoring teaching methods to diverse learner needs to mitigate negative emotions and foster positive emotional exchanges. Future studies could explore how emotional contagion operates across different cultural backgrounds, professional settings, and educational systems to further refine its theoretical framework.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by the Guangxi Science & Technology Normal University. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

HJ: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration,

Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Gen AI was used in the creation of this manuscript.

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Developing the Chinese version of the Index of Sojourner Social Support: the roles of socio-emotional and instrumental support in internal migrant university students

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Introduction: This study aims to validate the Index of Sojourner Social Support (ISSS)—a widely-used scale for measuring social support in cross-cultural (including cross-national and internal) migrations—in Chinese contexts among internal migrant university students and explore how such support can facilitate their psychological adjustment.

Methods: One thousand six hundred ninety-two university students who migrated from all around China to the city of Shanghai participated in this study. The ISSS was translated according to strict procedures. Item analysis, confirmatory factor analysis (CFA), reliability analysis, measurement equivalence test, criterion validity test, and incremental validity test of the Chinese version of the ISSS (ISSS-C) were carried out.

Results: The ISSS-C generated by this study had two dimensions (socio-emotional support and instrumental support) of 18 items. The model fit was excellent ($\chi^2/df = 5.64$, CFI = 0.96, TLI = 0.95, SRMR = 0.03, and RMSEA = 0.06). The McDonald's omegas for its two subscales were both 0.96. The measurement equivalence of the ISSS-C and criterion validity were also excellent. Instrumental support significantly influenced students' psychological adjustment to the host culture, partially establishing incremental validity for the scale.

Discussion: The ISSS-C exhibits good psychometric properties and is appropriate for measuring social support perceived by migrant university students in Chinese cultural contexts. Further, instrumental support can assist them in psychologically adjusting well to local environments.

KEYWORDS

Index of Sojourner Social Support, socio-emotional support, instrumental support, scale validation, internal migration, university students, China

1 Introduction

Social support in general refers to the care, aid, or networks of physical and psychological assistance individuals perceive or actually receive from others to deal with stress (House, 1981; Cohen, 2004). It is a broad “meta-construct” encompassing a series of sub-constructs (Heller and Swindle, 1983; Vaux et al., 1987) that play essential roles in reducing stress and promoting physical and mental wellbeing during life-changing scenarios (Andrews et al., 1978; Dean and Ensel, 1982; Argyle, 1992; Yue et al., 2024).

During transitions to distinct cultural environments, social support has been shown to positively impact individuals' cross-cultural adaptation, which refers to the psychological outcome of individuals' higher levels of comfort, ease, or satisfaction in culturally distinct settings (Black, 1988), and also acculturation, which represents the process of managing transitions in a new cultural context (Berry, 1997). Such positive influences have been known to ameliorate stress (Adelman, 1988; Walton, 1990; McLean et al., 2023) and robustly predict psychological adjustment to local conditions (Zhang and Goodson, 2011; Bender et al., 2019).

In transitions across cultures, social support is usually made up of two components—socio-emotional support and instrumental support (Ong and Ward, 2005). Socio-emotional support concerns the assistance provided by individuals who reassure their affection and respect, offer company and consolation, and share both joys and sorrows. More often offered by people of the host culture, socio-emotional support is predictive of lower levels of depression and promotes adaptation during transitioning periods (Ramsay et al., 2007; Dawson and Samek, 2022). Instrumental support, on the other hand, entails having individuals who elucidate the local group's culture, help navigate local regulations, assist in orienting to new surroundings, and provide information regarding available options. This component has also been found to reduce the negative effects in acculturation and play a more critical role in facilitating psychological adjustment in cross-cultural migrations (Finch and Vega, 2003; Ong and Ward, 2005; Tindle et al., 2022).

Social support in intercultural transitions can be measured in either objective or subjective manners (Solomon et al., 1987). Objective social support is usually represented by received social support which concerns the supportive behaviors offered by one's network (Barrera, 1986). Subjective social support is typically measured by perceived social support (Zimet et al., 1988; Lee and Robbins, 1995), reflecting the perceived availability of social help that buffer stress during relocation (Ong and Ward, 2005). It has been shown that, compared with objective social support, subjective social support is more positively related to mental health (Prati and Pietrantoni, 2010; Yan et al., 2024).

As regards sources, social support in cross-cultural contexts comes from individuals of the same cultural background and those of the host culture. Strong connections with individuals of the same cultural group can help people adapt to local conditions well (Al-Sharideh and Goe, 1998) and support from the host network promotes their wellbeing during the acculturation processes (Searle and Ward, 1990; Zhang and Goodson, 2011; Geeraert and Demoulin, 2013; Hirai et al., 2015).

Over decades, researchers have developed numerous measurement instruments for assessing social support (e.g., Barrera et al., 1981; Flaherty et al., 1983; Procidano and Heller, 1983; Vaux et al., 1986; Zimet et al., 1988; Tracy and Whittaker, 1990; Mitchell et al., 2003; Gordon-Hollingsworth et al., 2016). However, since social support has been established as a meta-construct that can be conceptualized into different components for different purposes or situations in operation (Vaux, 1988; Vazquez-Morejon and Garcia-Boveda, 1997), different scales assess social support from highly distinct perspectives. The validity of intercultural adaption studies is often undermined when they use social support assessment tools not intended for such a purpose

(Veiel, 1985; Ong and Ward, 2005). To address this problem, the Index of Sojourner Social Support (ISSS) Scale (Ong and Ward, 2005) was compiled and has soon been widely used in this regard.

The ISSS is a comprehensive instrument tailor-made for cross-cultural settings that measures individuals' perceived social support from the sources of their own and host networks using two components (socio-emotional support and instrumental support). To develop this scale, Ong and Ward (2005) initially generated a total of 64 items from existing measures and from a survey administered by themselves among expatriates in Singapore. Based on an exploratory factor analysis, content analysis, and item-total and inter-item correlation analyses of the 64 items, the original English version of the ISSS scale of 18 items and two factors were generated. Measurement invariance, construct validity, and incremental validity tests that followed further supported this two-factor configuration. They also tested the scale among international students in New Zealand. The results supported the original two-factor model though a one-factor solution (18 items) also exhibited good model fit.

Later, the ISSS was examined by other researchers in non-English-speaking societies. A validation study by Gilbert and Rhodes (2012) using a translated Spanish version of the ISSS revealed that the original two factors were not sufficiently distinct constructs. Instead, they respecified a one-factor measure containing 11 items. Rhodes et al. (2013) tested the ISSS in another Spanish-speaking community. The results showed that three items cross-loaded on both factors, undermining the scale's discriminant validity. After removing the three items, a new two-factor model of 15 items was formed and exhibited improved model fit.

Since its compilation, the ISSS has been widely adopted in studies regarding cross-cultural migrations, a considerable number of which were carried out in Chinese contexts. While a few of these studies examined sojourners' cross-national experience (e.g., Cheng et al., 2018; English et al., 2021), the overwhelming majority of them delved into internal migration situations within China (e.g., Li and Xia, 2018; Wang et al., 2018; Chen and Yang, 2022; Xiong R. et al., 2021; Xiong M. et al., 2021; Ni et al., 2016; Chen et al., 2021; Xiong et al., 2023). However, despite its wide application in China, no thorough validation study of the ISSS has ever been carried out in Chinese contexts. Most existing studies utilizing the original ISSS in China merely reported Cronbach's alpha coefficients and only one study reported satisfactory model fit. Nevertheless, given the aforementioned mixed results of factorial and discriminant validity tests of this scale in other non-English speaking cultural contexts and the fact that structures of scales concerning cross-cultural issues often change in different cultural conditions (Bücker et al., 2015; Bahar-Özvaris et al., 2022; Fu et al., 2024), using the original ISSS not thoroughly evaluated in local contexts may undermine the validity of relevant research (Brown et al., 2015). Therefore, it is crucial to thoroughly explore the latent constructs of cross-cultural perceived social support in Chinese contexts through testing the dimensionality of the ISSS in such cultural environments, and further examine the validity and reliability of the model.

In addition, as noted, though social support in cross-cultural situations positively influences psychological adjustment—a concept focusing on emotional wellbeing, satisfaction with life,

and a sense of purpose and hope (Ward and Kennedy, 1999)—and migrations within China can be regarded as cross-cultural (English and Worlton, 2017) due to the country’s large size and its vast cultural diversity (Talhelm et al., 2014; Talhelm and English, 2020), no study has considered whether social support can predict psychological adjustment in intra-country migrations, even though most studies using the ISSS in Chinese contexts were conducted in such conditions.

In light of the gaps in the extant body of literature, the present study aims to conduct a thorough large-scale test and revision of the ISSS among Chinese migrant university students in order to develop and validate a Chinese version of the ISSS (ISSS-C). Furthermore, this study is also intended to find out whether social support in internal migration settings can help students adapt well psychologically to local conditions in Shanghai, a viable place for such research because this dynamic multicultural city is not only a hub for higher education where numerous universities attract applicants from all over China, but also a global economic center where, compared to other parts of the country, there are more people from different parts of China and the world seeking opportunities (Farrer, 2016; Tian and Liu, 2021). University students here have more chances of interacting with people from diverse cultural backgrounds.

2 Materials and methods

2.1 Procedure and participants

This study employed a cross-sectional design to retrieve data from university students in Shanghai using questionnaire surveys. As suggested by extant scale development and validation studies (Ong and Ward, 2005; Huang and Wen, 2021), validity tests (including criterion validity and incremental validity tests) that involve other scales are better performed on new samples to further validate the structure of the scale. Therefore, three online questionnaires were created using Questionnaire Star (<http://www.wjx.cn>) and distributed via QR codes. The first survey (21 items) was intended to develop the ISSS-C and evaluate its model fit, convergent validity, discriminant validity, reliability, and measurement invariance. To further test the new scale’s criterion validity and incremental validity, two more surveys (31 items and 29 items) were administered with the addition of the Chinese version of the Multi-dimensional Scale of Perceived Social Support (MSPSS; Wang et al., 2017) and the Schwartz Outcome Scale (SOS-10; Fu et al., 2024), respectively, together with the ISSS-C. Data were collected via convenience sampling. Specifically, teachers of three universities located in Shanghai (a natural science university, a social science university, and a medical university) were contacted to help distribute the online questionnaires among their own students (using the same three QR codes for the three surveys) before their class sessions or in their classes’ Wechat (a popular communication application in China) chat groups.

The inclusion criteria of participants were driven by two principles: they must be undergraduate or postgraduate students enrolled in academic programs of universities in Shanghai, and they must be living in Shanghai but did not live there before attending universities. The data collection of the three surveys

lasted 5 months (from January to May, 2024) and according to teachers recruited for the questionnaire distribution, at the time of the data collection, there were 2,231 students enrolled in their classes and 1,982 of them participated in the current research (89% participation rate). A total of 1,692 valid questionnaires were obtained after removing different kinds of invalid ones such as those with regular answers and those that failed to respond correctly to an embedded attention check item. The samples of the three surveys contained 1,206 (48.5% female; $M_{age} = 20.19$), 151 (46.4% female; $M_{age} = 22.18$), and 335 (51.9% female; $M_{age} = 21.04$) participants, respectively. Details of the samples can be found in Table 1. According to Hair et al. (2018), a sample-to-variable ratio in questionnaire surveys should ideally exceed

TABLE 1 Background of the samples.

Samples		Frequency	Percentage
Survey 1 sample (n = 1,206)			
1. What is your age?	18–22	983	81.5
	23–27	210	17.4
	28 and above	13	1.1
2. What is your gender?	Male	621	51.1
	Female	585	48.5
3. What is the size of your hometown?	Big city	443	36.7
	Medium or small city	354	29.4
	Town or village	409	33.9
Survey 2 sample (n = 151)			
1. What is your age?	18–22	66	43.7
	23–27	83	55.0
	28 and above	2	1.3
2. What is your gender?	Male	81	53.6
	Female	70	46.4
3. What is the size of your hometown?	Big city	34	22.5
	Medium or small city	46	30.5
	Town or village	71	47.0
Survey 3 sample (n = 335)			
1. What is your age?	18–22	203	61.8
	23–27	129	37.3
	28 and above	3	0.9
2. What is your gender?	Male	161	48.1
	Female	174	51.9
3. What is the size of your hometown?	Big city	103	30.7
	Medium or small city	110	32.8
	Town or village	122	36.4

20:1. Thus, the three samples of 1,206 respondents (40:2), 151 respondents (100:5), and 335 respondents (60:3) all surpassed the minimum required levels. All subjects participated voluntarily in this study and received a randomly drawn bonus of gratitude (one to two Yuan) by the Questionnaire Star system upon completion. All methods in the Questionnaire Star system were carried out in accordance with Personal Information Protection Law of the People's Republic of China.

2.2 Measurement tools

All three surveys in the current study consisted of two segments. The first segment included demographic information regarding students' gender, age, and the size of their hometown which has been shown to have potential influences on the results of internal migration studies in China (Chen and Wong, 2022; Fu et al., 2024). The second section contained one to two instruments depending on the purpose of that survey. Specifically, the second section of the first survey contained the 18-item ISSS for developing the ISSS-C. The second section of the second survey included the ISSS-C and the Multi-dimensional Scale of Perceived Social Support (MSPSS) Chinese version in order to test the criterion validity of the ISSS-C. For the third survey, the second segment comprised the ISSS-C and the Chinese version of the Schwartz Outcome Scale (SOS-10) to test whether socio-emotional or instrumental support can predict students' psychological adjustment in internal migration settings and provide evidence for the ISSS-C's incremental validity. All items in this study were presented in Chinese. Five-point Likert-scale questions were used in all the three measures (1 = completely not applicable, 5 = completely applicable).

The 18-item Index of Sojourner Social Support (Ong and Ward, 2005) was applied to develop its Chinese counterpart. The ISSS evaluates perceived social support in intercultural contexts with two subscales—socio-emotional support (9 items; e.g., “comfort you whenever you feel homesick”) and instrumental support (9 items; e.g., “provide necessary information to help orient you to your new surroundings”). All the items in the ISSS were translated and back-translated by a local English language teacher and a native English-speaking teacher proficient in Chinese following standard procedures (Brislin, 1980); the wording was also checked for fitness in local contexts.

The Chinese version of the Multi-dimensional Scale of Perceived Social Support (Wang et al., 2017) was employed to establish criterion validity for the new ISSS-C. Similar to the ISSS-C, the Chinese version of MSPSS also measures perceived social support (but in a comprehensive manner), and is one of the most widely-used scales in this domain (Wang et al., 2017). The MSPSS Chinese version is a 12-item instrument comprising three dimensions—support from family (4 items; e.g., “my family really tries to help me”), support from friends (4 items; e.g., “I can talk about my problems with my friends”), and support from significant others (4 items; e.g., “there is a special person who is around when I am in need”). Extant literature has shown that compared with seven-point formats (based on which the original MSPSS was developed among North American students), responses from East

Asian (especially Chinese) students using five-point scales are less biased (Chen et al., 1995; Ares, 2018; de Rezende and de Medeiros, 2022; Yichen and Chuntian, 2024). Also, in order to avoid having two separate instructions and potentially confusing students in the second survey, a five-point rating scale for the MSPSS ranging from 1 to 5 was adopted according to a prior study conducted among Chinese university students (Yichen and Chuntian, 2024). In the current study, this scale showed good model fit ($\chi^2/df = 1.524$, CFI = 0.984, TLI = 0.980, and RMSEA = 0.059) and the McDonald's ω of the whole instrument, support from family subscale, support from friends subscale, and support from significant others subscale was 0.957, 0.918, 0.932, and 0.930, respectively.

The Chinese version of the Schwartz Outcome Scale (SOS-10) adopted from Fu et al. (2024) was utilized to evaluate university students' overall psychological adjustment. Originally developed by Blais et al. (1999), this is a unidimensional measure of 10 items (e.g., I feel hopeful about my future). In the present study, this model revealed sound fit to the data ($\chi^2/df = 3.327$, CFI = 0.954, TLI = 0.935, and RMSEA = 0.083) and the ω was 0.900.

2.3 Data analysis

Data in the present study were analyzed with SPSS 26.0, Mplus 8.3, and AMOS 23.0. SPSS was utilized for descriptive statistics, reliability analyses, correlation analyses, and regression analysis. Mplus was used to assess the structural validity and measurement equivalence of the ISSS-C in the first survey through maximum likelihood with robust standard errors (MLR) method. AMOS was used to test model fit of scales in the second and the third survey via maximum likelihood (ML) method. Specifically, first, items in the original ISSS were examined to ensure they were normally distributed and connected with their corresponding subscales. Second, confirmatory factor analyses (CFA) were carried out to assess the factorial structure of the ISSS-C. Third, reliability of the instrument and its dimensions was evaluated using McDonald's omega coefficients. Forth, the ISSS-C was further tested through multi-group confirmatory factor analysis (MGCF) to ensure its measurement equivalence across student groups from different sizes of hometown. Next, Bivariate correlation analyses between the two ISSS-C dimensions and the three dimensions of the MSPSS Chinese version were conducted to confirm the criterion validity of the new instrument. Lastly, a multivariate regression analysis was performed with the two ISSS-C factors as independent variables and psychological adjustment as dependent variable to test if social support in intra-country migration settings can predict psychological adjustment, and also attempted to establish incremental validity for the ISSS-C. The significance level of $p < 0.001$, $p < 0.01$, and $p < 0.05$ were chosen for all analyses.

3 Results

3.1 Item analysis

First, data normality of all ISSS items were assessed through Kolmogorov-Smirnov tests. The results showed that items were not normally distributed in strict terms ($ps < 0.05$). The skewness

and kurtosis values of every item in the ISSS were also inspected, which all lay between +2 and -2, indicating the data of every item still generally followed normal distribution (Tabachnick and Fidell, 2007). Then, polychoric correlation analyses were carried out between every item and the mean of the dimension it belonged. Results revealed that they were significantly correlated (with polychoric correlation coefficients ranging from 0.596 to 0.717). Hence, all the items were retained for further analyses.

3.2 Confirmatory factor analysis

CFA was performed. The results revealed that standard loadings of items in the socio-emotional support dimension was 0.79, 0.85, 0.84, 0.87, 0.87, 0.90, 0.83, 0.84, and 0.86, respectively, and those in the instrumental support dimension was 0.84, 0.82, 0.86, 0.89, 0.83, 0.88, 0.88, 0.80, and 0.82, all exceeding 0.50. The minimum, maximum, and median of all items were 1, 5, and 3. According to Schmitt (2011), the model fit was excellent ($\chi^2/df = 5.641$, CFI = 0.955, TLI = 0.949, SRMR = 0.028, and RMSEA = 0.062). The composite reliability (CR) of the two factors were 0.959 and 0.958, and the average variance extracted (AVE) of them were 0.721 and 0.716. Both CR and AVE values were above their respective thresholds of 0.60 and 0.50 (Fornell and Larcker, 1981), confirming convergent validity. The discriminant validity was determined via the heterotrait-monotrait ratio of correlations (HTMT). The result indicated that the HTMT ratio between the two factors was 0.868, lower than the threshold of 0.90 (Henseler et al., 2015), which confirmed the attainment of discriminant validity. Therefore, the two-factor ISSS Chinese version (the ISSS-C) exhibited good structural validity.

3.3 Reliability

The McDonald's omega values were used to determine the reliability of ISSS-C. The ω of the socio-emotional support dimension was 0.959 and that of the instrumental support dimension was 0.958. Hence, ISSS-C was tested to reveal high reliability.

3.4 Measurement equivalence across hometown sizes

In order to test the invariance of ISSS-C across participants' different hometown sizes, MGCFA were performed to investigate the configural invariance, the metric invariance, and the scalar invariance (Brown et al., 2015). The three groups compared were

students from big cities ($M_{age} = 19.6$; 55.3% female), those from medium or small cities ($M_{age} = 20.6$; 46.0% female), and students from towns or villages ($M_{age} = 20.5$; 43.3% female). The results showed that the model fit of these three models were sound and the Δ CFI, Δ RMSEA, and Δ SRMR between them were all smaller than 0.01 (Table 2), suggesting that the measurement equivalence of ISSS-C across student groups from different types of hometown was valid.

3.5 Criterion validity

To test the criterion validity of the ISSS-C, criterion variables theoretically relevant to social support in intercultural contexts were used. In the current study, the three dimensions (support from family, support from friends, and support from significant others) of the Chinese version of the MSPSS were adopted as criterion variables. The data collected in the second survey ($n = 151$) were used to perform this test. The ISSS-C model exhibited acceptable fit to the data ($\chi^2/df = 2.947$, CFI = 0.911, TLI = 0.898, SRMR = 0.045, and RMSEA = 0.114). Bivariate correlation analyses between the two dimensions of the ISSS-C and the three Chinese Version MSPSS dimensions were conducted. As shown in Table 3, socio-emotional support and instrumental support were positively correlated with all three criterion variables ($p < 0.01$), thus supporting criterion validity.

3.6 Incremental validity

As suggested by Ong and Ward (2005) who developed the original ISSS, incremental validity of the scale can be tested by assessing the predictive effects of the scale's two factors on psychological adjustment. This analysis used the data set obtained from the third survey ($n = 335$). The ISSS-C also showed acceptable model fit ($\chi^2/df = 3.766$, CFI = 0.942, TLI = 0.934, SRMR = 0.040, and RMSEA = 0.091). Before the regression analysis, tests were first performed to ensure the data were normally distributed and there were no multicollinearity issues. The skewness and kurtosis

TABLE 3 Correlation coefficients of the ISSS-C and criterion variables.

Criterion variables	Socio-emotional support	Instrumental support
Support from significant others	0.692**	0.710**
Support from family	0.612**	0.640**
Support from friends	0.610**	0.682**

** $p < 0.01$.

TABLE 2 Measurement equivalence across hometown sizes.

	RMSEA	SRMR	CFI	Model compare	Δ RMSEA	Δ SRMR	Δ CFI	Decision
M1: configural invariance	0.066 (0.062–0.071)	0.034	0.951					
M2: metric invariance	0.065 (0.061–0.070)	0.038	0.949	M1	0.001	0.004	0.002	Accept ($\Delta < 0.01$)
M3: scalar invariance	0.064 (0.060–0.068)	0.039	0.947	M2	0.001	0.001	0.002	Accept ($\Delta < 0.01$)

values of all items in the ISSS were examined, which indicates the data of every item generally followed normal distribution (Tabachnick and Fidell, 2007). The existence of multicollinearity was detected with three values: tolerance, variance inflation factor (VIF), and condition index (CI). The results showed that tolerance, VIF, and CI of all variables in the data fell within the threshold of 0.10, 10, and 30 (Hair et al., 2010; Sekaran and Bougie, 2010). Thus, the data set did not have multicollinearity problems. Then, a multivariate regression analysis was carried out on the sample obtained from the third survey with socio-emotional support and instrumental support as independent variables and psychological adjustment (measured by the Chinese version of the SOS-10) as the dependent variable. The results showed that instrumental support had a direct contribution to psychological adjustment ($\beta = 0.467$, $t = 6.816$, $p < 0.05$), but socio-emotional support did not influence psychological adjustment ($\beta = 0.127$, $t = 1.845$, $p > 0.05$). Such findings are in consistent with Ong and Ward (2005)'s original study, establishing incremental validity for instrumental support but not socio-emotional support.

4 Discussion

Social support is a meta-construct conceptualized distinctly depending on different purposes or situations in operation (Vaux, 1988; Vazquez-Morejon and Garcia-Boveda, 1997). Thus, cross-cultural studies using instruments not specifically designed for such purposes could produce invalid results (Veiel, 1985; Ong and Ward, 2005). Social support in cross-cultural contexts typically comprises socio-emotional support and instrumental support, and is known to alleviate stress and facilitate psychological adjustment to distinct cultural conditions (e.g., Adelman, 1988; Walton, 1990; Zhang and Goodson, 2011; English et al., 2021). However, for a long period, no social support instrument tailor-made for intercultural studies existed until the development of the Index of Sojourner Social Support by Ong and Ward (2005). Since then this scale has been widely applied in different countries, including China. Nevertheless, despite its popularity in China, particularly in internal migration conditions, no previous study has thoroughly validated the ISSS in Chinese contexts, potentially affecting the validity of studies using this scale, given the fact that the dimensionality of scales related to intercultural issues often vary across cultures (Bahar-Özvaris et al., 2022; Bücken et al., 2015). It is, therefore, highly necessary to develop a validated Chinese version of the ISSS.

In the current study, items in the original ISSS were first translated from English into Chinese and then back-translated into English by local and native English-speaking teachers according to strict procedures (Brislin, 1980), in order to ensure the semantic consistency between the original and the Chinese version. Next, item analysis showed that the data of all the items were normally distributed in general and related to their corresponding dimensions. CFA that followed confirmed the sound model fit, convergent validity, discriminant validity, and structural validity for this Chinese version scale. Reliability assessment based on McDonald's ω tests indicated the ISSS-C's good reliability. The results of the measurement equivalence test using multi-group

confirmatory factor analysis further showed the ISSS-C's equal measurement significance across student groups of different hometown sizes.

Criterion validity was then confirmed by bivariate correlation analyses between two ISSS-C dimensions and three theoretically relevant variables (support from family, support from friends, and support from significant others) from another widely-used scale that measures general perceived social support—the Chinese version of the MSPSS. Results showed that the two dimensions of the ISSS-C were positively correlated with the latter three variables ($p < 0.01$), indicating that the ISSS-C has sound criterion validity. It further revealed that support from family, friends, and other important individuals plays essential roles in students' relocation to new cultural environments within China.

Lastly, a regression analysis was performed to examine whether the two components of the ISSS-C can predict psychological adjustment in internal migration contexts and also test the incremental validity of the ISSS-C. The results revealed that instrumental support was predictive of university students' psychological adjustment, but socio-emotional support did not have a significant effect on psychological adjustment. Such findings were in agreement with the prior study in inter-country migration contexts (Ong and Ward, 2005), which means providing informational assistance for mobile university students in intra-country migration settings is as vital as that in inter-country ones, and, similar to the original ISSS, incremental validity of the ISSS-C in internal migration conditions was also partially established.

The findings of the current study indicates that, in internal migration settings in China, perceived social support also comprises two facets, demonstrating conceptual alignment with the original constructs (Ong and Ward, 2005). Unlike the previous mixed results of studies attempting to validate the ISSS in other non-English speaking contexts (Gilbert and Rhodes, 2012; Rhodes et al., 2013), this newly adapted and validated scale (the ISSS-C) consists of the same 18 items. It can be a useful tool for assessing the levels of socio-emotional and instrumental support accessible to internal migrant populations in future research. Furthermore, the findings of the current study also underscore the importance of instrumental support in contributing to individuals' psychological adjustment in domestic migration contexts.

Prior studies have found that university students who fail to psychologically adjust well to new cultural environments often suffer from depression, anxiety, loneliness, and academic difficulties (Nadeem et al., 2020; Corradi and Levrau, 2021). In order to help students overcome these challenges as well as improve their emotional wellbeing, satisfaction with life, and a sense of purpose and hope through enhancing psychological adjustment (Ward and Kennedy, 1999), the findings of the current study suggest that, for university administrators and local communities in Shanghai, providing relevant students with informational (rather than emotional) assistance can be more effective. Further, the approaches mentioned in the ISSS-C, such as helping students with local institutions' official rules and regulations, can be an ideal guide for local university administrators and communities to consider which specific types of instrumental support should be provided.

Taken together, the ISSS-C has the same two dimensions as the original ISSS. It also exhibits excellent reliability and validity.

Nonetheless, this study still has a number of limitations. First, to ensure the generalizability and stability of this instrument in Chinese contexts, further tests among other populations apart from university students still need to be conducted (Cheng et al., 2020). Second, this study adopted a cross-sectional design. Future longitudinal studies may further test the reliability of this scale (Cheng et al., 2020). Third, the results could be affected by social desirability biases common in self-report surveys. Other methods assessing social support in internal migration settings could be considered in the future development of this line of research to supplement questionnaire surveys (Nadeem et al., 2023). Fourth, the current study only explored the impact of the scale's two factors on psychological adjustment. Other relevant variables such as stress can be considered in future research (English and Worlton, 2017).

5 Conclusion

This study provides a validated and highly useful tool for measuring intercultural social support in cultural contexts of China—the ISSS-C. The results of this study indicate that the new scale has excellent psychometric properties and one of its dimensions—instrumental support—can assist Chinese university students in their psychological adjustment to local cultural conditions in their internal migrations.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the author, without undue reservation.

Ethics statement

The studies involving humans were approved by Institutional Ethics Review Committee of the SISU Intercultural

Institute, Shanghai International Studies University (SISU). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

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An empirical study on job burnout among university counselors and the improvement of occupational happiness

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University counselors undertake a significant amount of repetitive and trivial work. The high-pressure, high-load nature of their duties gradually erodes their enthusiasm and consumes considerable psychological resources, leading to a higher-than-average level of job burnout among university counselors. The article examines the practical work of university counselors, analyzing and validating the moderating role of emotional intelligence in the relationship between emotional labor and job burnout. In September 2023, a survey was conducted involving 520 university counselors from 25 different types of universities, located across six provinces in eastern, central, and western China. Using the General Information Questionnaire for University Teachers, the Emotional Labor Scale, the Emotional Intelligence Scale, and the Job Burnout Scale, this empirical study investigated job burnout and mental health among counselors. The study aimed to assess the level of job burnout among university counselors and to propose suggestions for enhancing their occupational happiness. The results indicate that burnout among university counselors increases with age, with counselors aged 26–30 experiencing the highest levels of depersonalization and burnout. Furthermore, it has been observed that emotional intelligence tends to escalate with advanced educational attainment. Counselors scored higher on the dimensions of deep acting and genuine emotional expression compared to surface acting. It is recommended to address burnout from both individual and organizational dimensions, with particular focus on counselors aged 26–30. Implementing targeted training programs to enhance emotional intelligence can help reduce job burnout. Efforts should be made to transform burnout into occupational attachment, achieving harmony between the individual and their profession.

KEYWORDS

ideological and political education, emotional intelligence, job burnout, empirical study, job satisfaction

1 Introduction

Job burnout, also known as “work burnout” or “occupational exhaustion” in some translations, is commonly regarded by researchers as a syndrome. There are three main manifestations: (1) Emotional Exhaustion: Also known as emotional depletion or burnout, this is the stress dimension of job burnout. It occurs when individuals' emotional and physical resources are over-exploited and not replenished in a timely and effective manner, leading to an imbalance and overdraft of emotional and physical resources. This results in employees exhibiting extreme fatigue symptoms such as irritability, anger, and fatigue, losing motivation at work, and it is the core dimension of job burnout.

(2) Depersonalization: Also referred to as dehumanization or depersonalization, this belongs to the interpersonal dimension of burnout. When individuals invest too much emotional resources without timely and effective replenishment, they display indifference, avoidance, and negativity in their work. This manifests as coldness, detachment, avoidance, and cynicism toward work objects and colleagues. (3) Diminished Personal Accomplishment: Also known as low personal accomplishment, this pertains to the self-evaluation dimension of burnout. It is characterized by employees feeling useless in their work, lacking a sense of achievement, feeling incompetent, having low work efficiency, and perceiving themselves as worthless or experiencing a reduced sense of self-worth in their work (Shen, 2012; Huang and Wang, 2018; He et al., 2022). Research indicates that high emotional labor is often associated with the occurrence of job burnout (Coaston, 2017). This paper builds upon the existing research findings on the dimensions, measurement, and influencing factors of emotional intelligence, emotional labor, and job burnout (Brotheridge and Grandey, 2002; Tang et al., 2007; Wang, 2010). By integrating these findings with the practical experiences of university counselors, the study primarily investigates the influence of emotional labor and emotional intelligence on job burnout among counselors (Lazarus and Folkman, 1984). Furthermore, it analyzes and validates the moderating role of emotional intelligence in the relationship between emotional labor and job burnout among counselors (Mullen et al., 2017; Guest and Carlson, 2019). The research findings contribute to a better understanding of the current status of emotional intelligence, emotional labor, and job burnout among university counselors (Li, 2010; Wu, 2013; Huang, 2020). They can serve as a valuable reference for university management departments in developing practices related to emotional management and human resource allocation for counselors (Zhang et al., 2022). The article focuses on the group of university counselors in China, examines the practical work of university counselors, analyzing and validating the moderating role of emotional intelligence in the relationship between emotional labor and job burnout. In September 2023, a survey was conducted involving 520 university counselors from 25 different types of universities, including Chang'an University, located across six provinces in eastern, central, and western China: Shaanxi, Gansu, Henan, Wuhan, Guangxi, and Beijing. Using the General Information Questionnaire for University Teachers, the Emotional Labor Scale, the Emotional Intelligence Scale, and the Job Burnout Scale, The findings can assist university management departments in implementing effective intervention measures to alleviate job burnout among counselors, thereby reducing its severity (Acker, 2012; Smith et al., 2014; Tang, 2020). This can lead to increased occupational happiness, organizational performance, student satisfaction, and counselor job satisfaction.

2 Research hypothesis

2.1 The relationship between emotional labor and occupational burnout

The depletion of resources can lead to psychological stress and discomfort for individuals. If this resource depletion is not

effectively replenished and supported, it may result in occupational burnout (Davis and Tuttle, 2017). We consider surface acting in emotional labor strategies as a form of disguised emotional expression. When individuals engage in surface acting, they need to suppress and conceal their true feelings. This requires effort and resources from the individual to regulate their emotions to meet the emotional requirements set by the organization (Mullen et al., 2019; Moore et al., 2023). Over time, this can lead to occupational burnout. Unlike surface acting, when individuals engage in deep acting, they strive to align their internal emotional experiences with the emotional rules required by the organization. This involves actively thinking, cognizing, and remembering to change their internal emotional experiences, resulting in a genuine emotional expression that meets the organizational requirements. Therefore, while individuals also need to exert effort and allocate resources to regulate emotions, “if deep acting is successful, it can bring positive effects such as self-satisfaction and self-fulfillment to employees” (Yang, 2015; Zhang and Yu, 2016). Consequently, individuals not only do not experience negative impacts, but there is also a possibility of reducing occupational burnout. When individuals engage in natural expression, their own emotions align closely with the emotions required by the enterprise or organization. Consequently, minimal effort is required, resulting in less emotional involvement. Both deep acting and natural expression can reduce emotional exhaustion (Song and Zhang, 2010; Shen, 2013; Lao, 2021). The natural and deep acting of college counselors can enhance job satisfaction. Based on these findings, the following hypothesis is proposed:

Hypothesis 1a: Surface acting in emotional labor positively predicts each dimension of occupational burnout.

Hypothesis 1b: Deep acting, as a component of emotional labor, is expected to exhibit a negative predictive relationship with each dimension of occupational burnout.

Hypothesis 1c: Authentic expression negatively predicts each dimension of occupational burnout.

2.2 The relationship between emotional intelligence and occupational burnout

Emotional intelligence is the ability of an individual to recognize and understand their own emotions as well as those of others, and to regulate and control their own emotions. Individuals with higher levels of emotional intelligence are better equipped to recognize and understand the reasons behind their negative emotions, allowing them to adjust these emotions more effectively and even mobilize positive emotions to facilitate task completion. People with high emotional intelligence typically possess a strong capacity for self-assessment of their emotions and for observing and evaluating the emotions of others. They also have a high ability to apply and control emotional regulation. It is reasonable to believe that individuals with high emotional intelligence experience lower levels of emotional exhaustion and job burnout. Numerous studies have demonstrated that “emotional intelligence has a significant negative effect on job burnout, with a particularly notable impact on the dimensions of depersonalization and reduced personal

accomplishment in job burnout.” Reilly (1994) found in a study focusing on college counselors that emotional intelligence is significantly negatively correlated with job burnout. Liu (2021) conducted a sampling study on college teachers from three different types of schools, which indicated that the four dimensions of emotional intelligence of college teachers were negatively correlated with occupational burnout. Based on this, the following hypothesis is proposed:

Hypothesis 2: Each dimension of emotional intelligence has a negative predictive effect on each dimension of burnout.

2.3 The regulatory effect of emotional intelligence

College counselors interact with a large number of students and their families on a daily basis, requiring significant emotional labor. They address various professional or procedural queries from students and manage emotions effectively throughout this process (Zhang et al., 2017; Kim and Lambie, 2018). Therefore, good emotional expression, the ability to assess others' and one's own emotions, and emotional management skills are essential abilities and techniques in the work of college counselors. Individuals with high emotional intelligence can effectively manage and regulate their own emotions, thereby fostering “positive interpersonal relationships, and gaining support and recognition” (Zhang and Yu, 2015; Xu et al., 2015; Wang, 2020). Positive interpersonal relationships enable college counselors to more easily accomplish their tasks, reducing work-related stress (Akhtar and Khan, 2019). High emotional intelligence allows for the accurate and effective assessment of both others' and one's own emotions, utilizing emotional regulation mechanisms to create positive emotions and effectively address negative ones (Bardhoshi and Um, 2021; Zhang et al., 2022).

Based on existing research findings and reasoning, the following research hypothesis is proposed:

Hypothesis 3: Each dimension of emotional intelligence moderates the relationship between emotional labor and job burnout.

3 Research objectives and methodology

3.1 Research objectives and data collection method

The survey respondents are university counselors from 25 different types of universities located in the eastern, central, and western regions of China. These universities include Chang'an University, Lanzhou University, Zhengzhou University, Wuhan University, Northwestern Polytechnical University, Guangxi University, Xi'an University of Science and Technology, Nanning Vocational and Technical College, China University of Geosciences (Beijing), among others, from six provinces, municipalities, or autonomous regions, namely Shaanxi, Gansu, Henan, Hubei, Guangxi, and Beijing. They must meet the following criteria:

(1) Have been employed for at least 1 year. (2) Voluntarily participate in the survey for this research project. A cross-sectional survey method was employed. With the assistance of the personnel departments and relevant colleges at each university, questionnaires were distributed to counselors. The counselors were provided with instructions on how to fill out the questionnaires. The surveyors collected the completed questionnaires within 7 days.

This survey, conducted in September 2023, distributed 520 questionnaires, of which 488 were returned as valid responses. The effective response rate was 93.85%. Please refer to Table 1 for details.

3.2 Research methodology

This research employs an empirical approach based on questionnaire surveys. The survey instrument utilized is a scale with high reliability and validity from Western sources, which have undergone corresponding reliability and validity studies within Chinese populations and have been demonstrated to be suitable for use among Chinese populations (Zhang et al., 2017; Tan et al., 2022).

3.2.1 Research proposal

Based on the aforementioned analysis and assumptions, this study aims to investigate the impact of emotional labor strategies on job burnout, the impact of emotional intelligence on job burnout, and the moderating effect of emotional intelligence on the relationship between emotional labor and job burnout. A preliminary hypothetical model has been established, as seen in Figure 1.

3.2.2 Measurement tools

(1) Survey form for university teachers general information

Contents include: Age, Gender, Educational Background, Department, Job Title, Years of Work Experience, Overtime Situation, Average Monthly Income, Marital Status, Academic Qualifications.

(2) Emotional Labor Scale

The Emotional Labor Strategy Questionnaire mainly includes three dimensions of surface acting, deep acting, and natural expression, totaling 14 questions. It is primarily used to measure the actual situation of emotional labor among counselors. We adopted a Six-point Likert scale to evaluate the items. Scores from 1 to 6 represent Never, Rarely, Occasionally, Sometimes, Often, Always, respectively. A higher score indicates that counselors use the strategy more frequently.

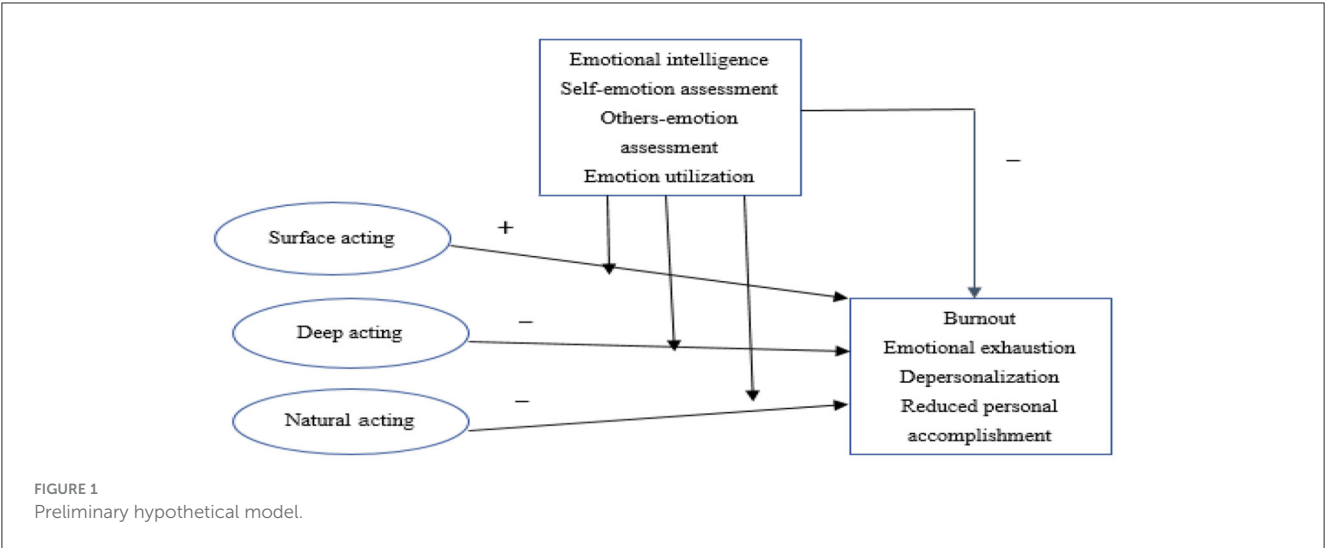
(3) Emotional Intelligence Scale

The Chinese version of the Emotional Intelligence Scale (WLEIS-C) was established based on the Wong and Law Emotional Intelligence Scale (WLEIS), translated and revised by Wang Yefei.

TABLE 1 Basic demographic statistics of 488 counselors from 25 universities in six provinces.

Indicator	Group category	Number	Composition ratio (%)	Indicator	Group category	Number	Composition ratio (%)
Age (years)	21 to <26	152	31.15	Departmental grouping	Science and engineering	316	64.75
	26 to <31	178	36.48		Liberal arts	112	22.95
	31 to <36	91	18.65		Other	60	12.3
	≥36	67	13.73	Years of work experience (a)	0 to <6	259	53.07
Gender	Male	6	1.23		≥6	229	46.72
	Female	482	98.77	Number of team members led grouping	0 to<6人	249	51.02
Marital status	Unmarried	207	42.42		≥6人	134	27.46
	Married	275	56.35	Monthly income grouping	<7,000	316	64.75
Education level	Other	6	1.2		≥7,000	157	32.17
	Bachelor's degree	22	4.51	Title grouping	Lecturer	249	51.02
	Master's degree	331	67.83		Associate Professor	215	44.06
	Doctorate	133	27.25		Professor	23	4.71
Overtime	Primarily on weekdays	274	56.15				
	Primarily on weekends	184	37.75				

^ Denote the common elements between two sets.



We utilized a Seven-point scale to evaluate the items, ranging from 0 to 6, representing Strongly Disagree, Somewhat Disagree, Disagree, Neutral, Somewhat Agree, Agree, and Strongly Agree, respectively. A higher score indicates higher emotional intelligence.

(4) Occupational Burnout Scale

The scale utilized is the Chinese version of the Occupational Burnout Inventory developed by Chinese scholars, tailored for the cultural context of China. We employed a Four-point scale to evaluate the items, ranging from 1 to 4, representing “Strongly

Disagree,” “Disagree,” “Agree,” and “Strongly Agree,” respectively. A higher score indicates more severe burnout.

3.2.3 Statistical analysis techniques

Valid questionnaires were inputted into Epidata software, and data entry was cross-checked to ensure accuracy. Statistical analysis was conducted using SPSS 19.0 software, with a significance level set at $P \leq 0.05$, indicating statistically significant differences. All P -values are two-tailed probabilities. In this regard:

(1) Independent sample *t*-tests and one-way ANOVA were conducted on demographic data grouped differently with Emotional Intelligence, Emotional Labor Scale, and dimensions of Nursing Occupational Burnout, respectively. (2) Pearson correlation coefficient was used to examine the relationship between demographic data and Emotional Intelligence, Emotional Labor Scale, and dimensions of Nursing Occupational Burnout, aiming to understand if significant correlations exist. This laid the foundation for regression analysis. (3) Pearson correlation coefficient was employed to examine the relationships between dimensions within each scale and between dimensions of Nursing Occupational Burnout, aiming to understand if significant correlations exist. This laid the foundation for regression analysis. (4) The results indicate that, in terms of age distribution, individuals aged <31 years accounted for 67.62% of the total sample, while those aged ≥31 years accounted for 32.38%, indicating a relatively young population. In terms of educational background distribution, individuals with a master's or doctoral degree accounted for 95.08% of the total sample. This indicates that the surveyed population generally has a high level of education, ensuring accurate understanding of the questionnaire items.

4 Research findings

4.1 Reliability test

As both the Emotional Labor Scale and the Emotional Intelligence Scale are mature instruments, reliability testing was not conducted in this study. The University Teachers' Occupational Burnout Scale, validated by Zhang (2015) among university teachers, has demonstrated good reliability and validity, indicating its suitability for counselors in China.

4.2 Scores of each dimension of the scales

Statistical results indicate that: (1) the scores for the Deep Acting dimension (4.62 ± 0.73) and the Natural Expression dimension (4.37 ± 0.96) were higher than the scores for the Surface Acting dimension (3.11 ± 1.05), as shown in Table 2. The results indicate that counselors commonly employ deep acting as their primary mode of interaction when facing students, followed by natural expression. Surface acting, however, is relatively less frequently used in these interactions. (2) The mean scores

for the dimension of assessing others' emotions are relatively small, indicating that counselors pay less attention to students' emotional changes in their work. This warrants attention from university administrators. (3) Among the dimensions of counselor burnout, the mean score for emotional exhaustion is the highest at 2.60, followed by reduced personal accomplishment, and depersonalization has the lowest mean score. The total burnout score is 2.30.

4.2.1 Scores of various scale dimensions among different age groups

Statistical analysis reveals the following insights: (1) Younger counselors utilize surface acting less than older counselors, with a statistically significant difference between age groups ($P < 0.05$). Conversely, older counselors employ deep acting more than younger counselors, with a statistically significant difference between age groups ($P < 0.05$). Moreover, the overall emotional labor burden is higher among older counselors compared to younger counselors. (2) Emotional Intelligence Scale and Emotion Management Dimension for Senior Counselors. Counselors in different age groups scored higher as their age increased, and the test results indicated that the differences were statistically significant ($P < 0.01$). (3) The data in the table also show that depersonalization decreases after initially increasing with age, with the 26–30 age group having the highest depersonalization score of 2.24. Burnout dimension shows a decreasing trend after initially increasing with age, with the 26–30 age group having the highest burnout score of 2.42. Analysis of variance (ANOVA) for different age groups indicates that the differences in depersonalization and burnout scores are statistically significant (both $P > 0.05$). See Table 3 for details.

4.2.2 Analysis of differences in various dimensions by educational background, marital status, and years of service

The score for evaluating others' emotions in the group with a master's degree or above was (4.10 ± 0.45), which showed a statistically significant difference compared to the group with a bachelor's degree or below according to the independent samples *t*-test ($P < 0.05$). The average score for emotional application in the group with a master's degree or above was 4.43, and this also showed a statistically significant difference compared to the

TABLE 2 Scores of various dimensions of scales among 488 counselors from 25 universities in six provinces.

Scale	Item	Score	Scale	Dimension	Score
Emotional labor	Surface acting	3.11 ± 1.05	Occupational burnout	Emotion management	3.88 ± 1.03
	Deep acting	4.62 ± 0.73		Total emotional intelligence score	4.11 ± 0.86
	Natural expression	4.37 ± 0.96		Emotional exhaustion	2.61 ± 0.74
	Total emotional labor score	4.10 ± 0.45		Depersonalization	2.11 ± 0.61
Emotional intelligence	Self-emotion appraisal	4.41 ± 0.94		Reduced personal accomplishment	2.19 ± 0.70
	Others' emotion appraisal	4.01 ± 0.90		Total burnout score	2.30 ± 0.60
	Emotion regulation	4.18 ± 0.99			

TABLE 3 Scores of different dimensions for counselors of various age groups from 25 universities in six provinces (N = 488).

Dimensions	Age (years)	Number of people	Score ($\bar{x} \pm s$)	F-value	P-value
Emotional labor	21 to <26	152	3.64 \pm 0.03	0.01	0.06
	26 to <31	178	4.04 \pm 0.44		
	31 to <36	91	4.09 \pm 0.45		
	≥ 36	67	4.22 \pm 0.43		
Emotional intelligence	21–25	152	4.08 \pm 0.81	1.79	0.15
	26–30	178	4.04 \pm 0.88		
	31–35	91	4.22 \pm 0.77		
	≥ 36	67	4.28 \pm 0.99		
Occupational burnout	21 to <26	152	2.23 \pm 0.64	2.76	0.04
	26 to <31	178	2.42 \pm 0.53		
	31 to <36	91	2.33 \pm 0.62		
	≥ 36	67	2.27 \pm 0.65		

group with a bachelor’s degree or below ($P < 0.01$). The average emotional intelligence score for the group with a master’s degree or above was 4.25, which showed a statistically significant difference compared to the group with a bachelor’s degree or below according to the independent samples t -test ($P < 0.05$). Emotional intelligence increases with higher educational levels. The scores for emotional labor, emotional intelligence, and burnout dimensions across different marital status groups showed no statistically significant differences (all $P > 0.05$).

4.2.3 Analysis of differences in various dimensions and total scale scores by department and number of supervised individuals

There are differences in occupational burnout among departments. As shown in the table, scores for emotional exhaustion, reduced personal accomplishment, and overall burnout gradually increase across the Science and Engineering, Humanities, and other departments. Analysis of variance confirms that these score differences are statistically significant ($P < 0.01$). The difference in depersonalization dimension scores was found to be statistically insignificant through variance analysis ($P > 0.05$; see Table 4. Several researchers have reached the same conclusion in their studies. Liberal arts advisors generally need to invest more emotional labor in their daily work, and they also face heavier workloads due to a relatively lower number of advisors compared to those in science and engineering.

Additionally, as shown in Table 4, the burnout scale scores for “emotional exhaustion,” “depersonalization,” and “reduced personal accomplishment” are higher in the group with over 60 students compared to other groups. The differences in scores were found to be statistically significant through independent sample t -tests ($P < 0.01$). It also shows that advisors with a higher number of students experience greater levels of emotional exhaustion, depersonalization, and reduced personal accomplishment compared to those with fewer students. Advisors with more students have to deal with a greater variety of situations and emotions, requiring them to invest more emotional labor.

Additionally, their overall workload is higher compared to advisors with fewer students, making them more prone to burnout.

5 Conclusions

5.1 The moderating role of emotional intelligence on emotional labor and job burnout

The statistical analysis reveals substantial correlations among the various facets of emotional labor and job burnout. This raises the question: How does emotional labor contribute to job burnout, and what is the predictive power of emotional intelligence concerning burnout? Additionally, what is the mediating role of emotional intelligence between emotional labor and burnout? Concentrating on the “emotional exhaustion” component of burnout, it is evident that, after accounting for demographic factors, surface acting in emotional labor positively forecasts “emotional exhaustion,” whereas deep acting has a significant negative predictive effect on “emotional exhaustion.” Furthermore, the “emotion management” aspect of emotional intelligence negatively predicts “emotional exhaustion.”

When controlling for the effects of the three dimensions of emotional labor and the four dimensions of emotional intelligence on “emotional exhaustion,” the inclusion of the interaction term SEA*SA in the model yields a significant Beta value, suggesting that the interplay between “self-emotion appraisal” and “surface acting” significantly influences “emotional exhaustion.” This indicates that “self-emotion appraisal” acts as a moderator in the relationship between “surface acting” and “emotional exhaustion,” with the implication that as the capacity for “self-emotion appraisal” increases, the influence of “surface acting” on “emotional exhaustion” diminishes.

This revised version aims to enhance clarity and flow while maintaining the original meaning of the text. It provides a more polished and academic tone suitable for scholarly writing.

TABLE 4 Scores of various dimensions for counselors from 25 universities in six provinces, differentiated by department and number of supervised individuals ($N = 488$, $\bar{x} \pm s$).

Item	Number of individuals	Emotional exhaustion	Depersonalization	Reduced personal accomplishment	Occupational burnout
Department					
Science and engineering	316	2.54 ± 0.70	2.13 ± 0.61	2.13 ± 0.66	2.27 ± 0.58
Liberal arts	112	2.72 ± 0.75	2.09 ± 0.55	2.32 ± 0.74	2.38 ± 0.58
Other	60	2.86 ± 0.87	2.3 ± 0.68	2.39 ± 0.80	2.52 ± 0.71
F-value		6.1	2.54	5.79	5.09
P-value		0.01	0.08	0.01	0.01
Number of supervised students	0 to <60	2.54 ± 0.71	2.08 ± 0.61	2.12 ± 0.66	2.25 ± 0.58
	≥ 60	2.76 ± 0.78	2.27 ± 0.56	2.33 ± 0.77	2.45 ± 0.63
t-value		−2.78	−2.95	−2.76	−3.18
P-value		0.01	0.01	0.01	0.01

The research findings highlight that the Beta value for the interaction term SEA*NA is statistically significant, implying that the interplay between self-emotion appraisal and natural acting exerts a substantial influence on “emotional exhaustion.” However, for a variable to act as a moderator, it is crucial that the independent variable has a significant effect on the dependent variable. This study’s outcomes demonstrate that “natural acting” does not exert a significant predictive influence on “emotional exhaustion,” thus invalidating the moderating relationship between “self-emotion appraisal” and “natural acting.”

Upon adjusting for demographic variables, it is observed that surface acting within emotional labor positively forecasts “depersonalization” in burnout, whereas deep acting significantly and negatively predicts “emotional exhaustion.” Moreover, “natural acting” is also found to significantly and negatively predict “emotional exhaustion.” Furthermore, the “emotion regulation” component of emotional intelligence is identified as a significant negative predictor of “depersonalization.”

This refined passage aims to clarify the statistical relationships and the conditions for moderation, while also providing a more structured presentation of the study’s outcomes. After controlling for demographic variables, surface acting in emotional labor positively predicts “reduced personal accomplishment” in burnout. Emotional intelligence’s “emotion regulation” significantly negatively predicts “reduced personal accomplishment.” After controlling for the effects of the three dimensions of emotional labor and the four dimensions of emotional intelligence on “reduced personal accomplishment,” the Beta value of the interaction variable ROE*NA becomes significant when the interaction variable is included in the equation. However, the premise for moderation is that the independent variable significantly influences the dependent variable. The results of this study indicate that “natural acting” does not have a significant predictive effect on “reduced personal accomplishment.” Therefore, the moderation relationship between “emotion regulation” and “natural acting” does not hold.

The moderating effect of emotional intelligence on the relationship between emotional labor and burnout, as delineated by Zhang et al. (2022), is characterized by the following observations:

- (1) Surface acting is positively associated with “emotional exhaustion,” “depersonalization,” and “reduced personal accomplishment.” Conversely, deep acting is negatively linked to “emotional exhaustion” and “depersonalization.”
- (2) “Emotion regulation” within emotional intelligence is negatively predictive of “emotional exhaustion.” Similarly, “emotion utilization” is negatively correlated with “depersonalization” and “reduced personal accomplishment.”
- (3) “Self-emotion appraisal” acts as a moderator in the relationship between “surface acting” and “emotional exhaustion,” while “emotion regulation” moderates the link between “surface acting” and “depersonalization.”

Drawing from these research findings, a clear picture emerges of how, after accounting for demographic variables, emotional intelligence and the interaction terms of emotional labor, when incrementally included in the regression model, illustrate the intricate impact relationships among the dimensions of emotional labor, emotional intelligence, and the various components of job burnout.

5.2 Direct impact of emotional labor strategies on occupational burnout

The research findings indicate that surface acting by counselors has a positive and significant influence on all three dimensions of burnout: “emotional exhaustion,” “depersonalization,” and “reduced personal accomplishment.” Previous studies have consistently shown a positive correlation between surface acting and emotional exhaustion, depersonalization, and reduced personal accomplishment. This reaffirms that surface acting serves

as an effective predictive factor for emotional exhaustion and depersonalization. This pretense and suppression of emotions can lead counselors to perceive their work as meaningless and contrary to their own desires. Moreover, this pretense of emotions can mask the expression of counselors' natural behaviors, making individuals feel as though they are merely disguising themselves to fulfill professional images and ethics. The lack of fulfillment in meeting psychological needs at work, coupled with the absence of personal achievement satisfaction, contributes significantly to emotional exhaustion and depersonalization among counselors. Deep acting behavior is found to have a significant negative predictive effect on emotional exhaustion and depersonalization. Some studies have found that "deep acting" can positively predict reduced personal accomplishment. However, deep acting does not significantly predict emotional exhaustion or depersonalization (Huang and Wang, 2018; He et al., 2022).

The study suggests that counselors who employ deep acting are adept at utilizing emotion utilization and emotion regulation to effectively alter their inner feelings. Consequently, they project positive, friendly, and uplifting emotions when interacting with students, families, and colleagues. This ability contributes to fostering strong interpersonal relationships and experiencing job satisfaction. Individuals with a sense of accomplishment in their work tend to have a pleasant emotional state and are less likely to experience emotional exhaustion and depersonalization (Hochschild, 1983; Maslach et al., 2001).

Counselors' "natural behavior" has a significant negative predictive effect on "depersonalization." Counselors who demonstrate care and compassion toward students in their work foster positive teacher-student relationships, receive higher evaluations from students (Ahmed et al., 2020), and achieve a higher quality of ideological and political education. Counselors with high-quality ideological and political education are more likely to garner recognition and support from colleagues and students, thereby fostering positive interpersonal relationships. Positive interpersonal relationships encourage counselors to actively engage with students, leading to more personalized communication. This reduces the likelihood of depersonalization or disintegration of personality among counselors.

The results indicate that there is a statistically significant difference between the scores of individuals with a master's degree or higher and those with a bachelor's degree or lower in the dimensions of "other emotion appraisal," "emotion utilization," and the total score of emotional intelligence, suggesting a correlation between emotional intelligence and educational level. Emotional intelligence increases as educational level rises. The study suggests that there is a correlation between emotional intelligence and education. Counselors with a master's degree or higher have undergone more extensive education and training, thereby possessing a greater theoretical understanding of emotional accumulation and placing greater emphasis on emotional experiences compared to counselors with a bachelor's degree or lower.

At the same time, the results demonstrate that individuals in different tenure groups score significantly differently on various dimensions of WLEIS-C (Parmar et al., 2022), as confirmed by statistical analysis. Emotional intelligence tends to increase with

age and experience. From this table, it can be observed that individuals with different lengths of tenure score higher when they have longer tenure compared to those with shorter tenure. The scores of tenure groups on WLEIS-C compared to age in various dimensions of the scale show significant differences across more dimensions as tenure increases. This could be attributed to the continuous accumulation of experience in practical work, leading counselors to gain a deeper understanding of students and families, accumulate emotional experience, and become increasingly adept at controlling their emotions. Consequently, emotional intelligence gradually increases.

5.3 The direct impact of emotional intelligence on occupational burnout is evident

The study findings reveal a positive correlation between age and the overall emotional labor burden, indicating that older counselors tend to have more advanced and comprehensive strategies for handling emotional labor. This suggests that with age comes a richer tapestry of experience in the expression of emotional labor. Older counselors are more adept at articulating their emotional labor strategies, and they are also more inclined to utilize emotional expression tactics within their emotional labor repertoire. It can also be observed that older counselors have higher emotional intelligence scores compared to younger counselors (Zhang and Yu, 2016). Research abroad has shown that emotional intelligence increases with age and experience, with age being positively correlated with emotional intelligence (Mayer and Salovey, 1997; Brotheridge and Lee, 2002). Domestic researchers have also reached similar conclusions. As counselors age, they show improvements in self and others' emotional appraisal as well as in emotional regulation and utilization, indicating that counselors enhance their emotional intelligence through the trials and experiences of work and life events. This also suggests that emotional intelligence can be enhanced through training. In terms of counselor burnout, depersonalization and overall burnout scores show an initial increase with age followed by a decline. The age group of 26–30 years exhibits the highest scores in depersonalization and overall burnout. There are statistically significant differences in scores for depersonalization and burnout among different age groups. This age group of counselors faces higher levels of stress compared to other age groups. Many counselors in this age group have been involved in ideological and political education for 6–10 years. Perhaps they are experiencing the "7-year itch" of their careers, facing pressures related to job promotion, family responsibilities, and high expectations from students and family members in their work. These factors may be wearing down their passion for this profession. As counselors enter the subsequent age group, their emotional intelligence tends to increase while their work experience becomes richer. They become more familiar with their colleagues in the workplace, and their strategies for managing emotional labor become more skillful and adept. Consequently, burnout begins to decline.

The statistical findings underscore a robust negative correlation between the scores of the four dimensions of emotional intelligence among counselors and the three dimensions of counselor burnout. Hierarchical linear regression analysis further demonstrates that “emotion management” negatively predicts “emotional exhaustion,” while “emotion utilization” negatively predicts “depersonalization” and “reduced personal accomplishment.” That is, counselors with stronger emotional management skills or emotional utilization abilities experience lower levels of occupational burnout (He et al., 2022).

5.4 Implications for counseling practice

5.4.1 Individual aspect

Counselors shoulder a significant amount of repetitive and mundane tasks in their work. The high-pressure and high-load nature of their work is also eroding their enthusiasm, depleting their psychological resources, leading to a higher level of occupational burnout among counselors compared to the norm. Through this study, counselors can reduce the level of occupational burnout and enhance their professional attachment and job satisfaction by focusing on the following two points:

1. By enhancing their own emotional intelligence, counselors can reduce the occurrence of occupational burnout and increase professional attachment.

Research indicates that improving counselors’ emotional utilization and emotional management both decrease the level of occupational burnout. Counselors should focus on enhancing their emotional intelligence in their work. As counselors gain more experience, their emotional intelligence tends to increase. Practical work experience serves as a beneficial pathway for enhancing counselors’ emotional intelligence. Counselors should pay attention to improving their ability to regulate and control emotions in their work to avoid the psychological energy drain caused by emotional conflicts, thereby reducing the level of occupational burnout. In addition, counselors can enhance their emotional management and control abilities and reduce the occurrence of burnout by attending relevant training courses.

2. During the process of emotional labor, counselors should minimize the use of surface acting strategies and instead rely more on deep acting and natural behavior. This can help enhance their job satisfaction.

When facing students who are experiencing various difficulties such as academic or psychological challenges in their work, counselors should not simply feign sympathy temporarily. Instead, they should utilize cognitive regulation techniques to internalize the required professional emotions as their own natural emotions. Through techniques like scenario simulation, counselors can evoke empathetic understanding and care, enabling genuine emotional

connection with students. This approach helps reduce the need for pretense in facial expressions and body language, thereby decreasing the consumption of psychological energy. As a result, it can lower the level of occupational burnout and enhance job satisfaction.

5.4.2 Organizational aspect

1. Counselors with larger caseloads are more prone to experiencing burnout. Additionally, counselors predominantly involved in liberal arts disciplines exhibit significantly higher levels of burnout compared to those in science and engineering disciplines.

The school’s management department should take into account the appropriate number of students assigned to counselors when planning counselor allocations. Additionally, they can consider implementing a rotation system for counselors among different departments to prevent counselors in departments with higher burnout levels from experiencing prolonged burnout, which could lead to adverse psychological and physiological effects, or even resignation.

2. Counselor burnout increases with age, with counselors aged 26–30 exhibiting the highest levels of depersonalization and burnout.

The school’s management department should pay special attention to counselors in this age group and provide timely counseling and stress relief to prevent experienced counselors in this age group from resigning due to unresolved occupational burnout. This could lead to counselor turnover, which would impact the development of the ideological and political education talent pool and even hinder the establishment of management talent teams.

3. Emotional intelligence of counselors tends to increase with age, and counselors with weaker emotional management and utilization abilities are more prone to experiencing tendencies toward burnout.

The school’s management department can enhance counselors’ emotional intelligence abilities by offering relevant training courses. These courses can focus on improving counselors’ emotional appraisal, emotion utilization, and control abilities, enabling them to adeptly handle various conflicts and contradictions in their work.

4. Counselors with high emotional intelligence can mitigate the impact of emotional labor on burnout through regulatory mechanisms. They are better equipped to cope with occupational burnout and understand how to explore pathways to enhance job satisfaction.

Therefore, the school’s management department can consider evaluating the emotional intelligence of candidates

during the recruitment process to hire suitable counselors. Additionally, they can consider implementing relevant courses to enhance teachers' emotional intelligence, job satisfaction, and professional attachment.

6 Study limitations and future research counseling implications

Due to limitations in time, energy, and the researcher's capabilities, this study, despite yielding some valuable results, has several shortcomings:

- (1) **Sample Selection:** The study utilized 488 valid questionnaires, which meets the sample size requirements for survey research. However, the use of a sampling survey means the subjects may not be broadly representative. As a result, it remains uncertain whether the findings are generalizable and applicable to a wider context.
- (2) **Research Methods and Tools:** This study employed a cross-sectional questionnaire survey, a relatively straightforward method. Moreover, the scales and instruments used are not widely adopted domestically. The wording of the items may not fully adhere to the conventions of Chinese expression. Additionally, due to the author's limited expertise, exploratory and confirmatory factor analyses of the scales were not conducted, which are necessary to further validate their application within the context of Chinese culture.

7 Research prospects

- (1) **Broader Sampling:** Future studies should consider selecting samples from diverse regions and various types of universities to conduct more comprehensive and in-depth research, aiming to achieve more generalizable results.
- (2) **Diverse Methodologies:** Employing a range of approaches and methods can enhance the research. Data collection could be improved through techniques such as in-depth interviews, experiments, or quasi-experimental methods to acquire more authentic and reliable data. Additionally, incorporating case studies and other research methods could provide further insights.
- (3) **Extended Analysis:** This study focused on the relationship between emotional labor and job burnout, and the moderating role of emotional intelligence in this relationship. Future research should investigate the specific role of emotional labor in the interplay between emotional intelligence and job burnout.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

Q-QL: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Funding acquisition. FY: Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Emotion-related theories in classroom language learning: the conceptualization and causation of emotions

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Language classrooms are embedded with a wide range of emotions. Emotions play a significant role in affecting learners' language learning and academic performance. Yet, while the role of emotions in L2 classrooms has been recognized, very scant studies have investigated the underlying theoretical frameworks in great depth with regard to the conceptualization and causation of emotions. Moreover, very few review studies have paid sufficient attention to the antecedents or causes of emotions underpinned by certain theories in the field of SLA. Therefore, to offer a complementary review of emotion-related theories and provide fresh insights into the emotional research in SLA, the present study first explains the theoretical approaches of the conceptualization and causation of emotions, elucidates how these theories are applied into the emotional research in language learning, and identifies the effect of the interplay between cognitive, psychological, social, and contextual factors on the emotional development in the language learning. Finally, practical implications, like emotional regulation strategies for both language teachers and learners and future directions, like the integration with AI tools for L2 researchers, language teachers, and teacher educators who are interested in emotional research are also discussed.

KEYWORDS

emotions, theoretical approaches, SLA, conceptualization, causation

1 Introduction

Emotions have emerged as one of the most significant issues in contemporary educational research (Dewaele, 2021). For a few decades, educational research has put a strong focus on the cognitive development of learning and teaching and neglected emotions until the 1990s, when there was an affective transition in educational science (Li, 2020). Researchers in the field of education started to recognize the fact that emotions are prevalent in classroom contexts. Also, they began to realize the fact that teachers and students frequently experience a rich variety of emotions that are complex, manifold, and momentous (Schutz and Pekrun, 2007). In view of this, emotions are no longer regarded as irrelevant phenomena occurring in educational settings. Instead, it is acknowledged that emotions should be considered as greatly significant for students' learning, psychological wellbeing, and all-round development. In addition, emotions can also affect teachers' professional development and classroom instructions, which could have great influence in the productivity of schools and other educational institutions all over the world (Pekrun and Linnenbrink-Garcia, 2014).

In the area of language learning, language classrooms are prevalent with a wide range of emotions, such as anxiety, enjoyment, guilt, and boredom (Bown and White, 2010; Swain, 2013). Emotions are considered to have an impact on second language (L2) learners'

learning and performance. They do so by guiding the attentional processes of L2 learners and the utilization of cognitive resources, arousing and maintaining learners' interest in language learning materials, activating various modes of information processing, and either facilitating or impeding learners' engagement and self-regulation in the learning process (Pekrun, 2006; Schumann, 1994). Given the significant role of emotions in second language acquisition (SLA), there has been an increasing number of studies on emotions in SLA over the past three decades (Saito et al., 2018). Nevertheless, although some L2 researchers have acknowledged the vital role of emotions in language learning and conducted a substantial amount of research on emotions, with a primary focus on negative emotions, particularly L2 anxiety (Cheng, 2017; Dewaele et al., 2008), emotions still remain underresearched, which is especially evident when contrasted with the extensive exploration of mainstream cognitive development in language learning studies (Shao et al., 2019; Li et al., 2024).

Despite the important role that emotions play in learners' language learning process, the prior studies have mostly investigated negative emotions and the relationships between emotions and other variables (e.g., Alrabai, 2022; Wang et al., 2021). Very few L2 researchers have paid attention to the application of emotion theories underpinning the conceptualization and causation of emotions (Dewaele and Li, 2020). Furthermore, there have been very scant review studies aimed at elucidating the emotional theories and shedding light on their distinctive characteristics. For example, Wang (2024) specifically reviewed how positive psychology (PP) was developed in the study of emotions in SLA from its theoretical foundations, study topics, and study methods. Moreover, Oxford (2015) synthesized some theories of emotion with relation to language learning, such as PP, social psychology, social constructivism, and social constructionism. Noels et al. (2019) particularly evaluated how self-determination theory (SDT) was applied to understanding the development of language learners' motivational orientations and engagement. In spite of the prior works on emotional theories, there is still much more work to do. Therefore, the present study seeks to delineate the underlying theoretical paradigms of the conceptualization and causation of emotions, demonstrate the applications and contributions of these theories pertinent to emotional research in SLA, and provide practical implications and directions for L2 researchers and language teachers. More specifically, the study presents research findings that identify the causal links between emotions and other factors, which may help L2 researchers gain some novel insights and find new directions in emotions for future empirical research.

2 Emotional theories in SLA

The emotional research in the field of language learning can be traced back to the 1970s. During the period of the early 1960s and the mid-1980s, the research attention in SLA was predominantly focused on the cognitive factors (Prior, 2019), which was known as the Emotion Avoidance Phase (Dewaele and Li, 2020). Later, between the mid-1980s and the early 2010s, the emotional research experienced the second phase where emotions started to

gain more research attention, which was known as the anxiety-prevailing phase, with the dominant focus on negative emotions (MacIntyre, 2017). Since the early 2010, when positive psychology was introduced into applied linguistics (MacIntyre, 2016), and emotional research in SLA came into the third phase, "the Positive and Negative Emotion Phase." Despite a bulk of emotion studies published in SLA over the past few decades, L2 researchers pay little scholarly attention to illuminate the concept of emotions and elucidate the underpinning theories on the conceptualization of emotions in L2 learning (Dewaele and Li, 2020). In terms of the conceptualization of L2 emotions, two approaches are involved: the basic approach and the dimensional approach (Dewaele and Li, 2020). Based on the basic emotional theory, the fundamental proposition can be traced back to the traditional assumptions proposed by Ekman (1984), who contended that human emotions include several basic emotions. These emotions, including six basic ones (i.e., happy, surprise, fear, disgust, angry, and sad), are characterized as discrete, universal, and biologically driven, as well as linked with specific behavioral and facial expressions and action tendencies. By contrast, according to the dimensional theory, emotional constructs are perceived as including three independent dimensions: pleasure/valence, arousal/activation, and dominance/control, which can be found in the "PAD Model" (Russell and Mehrabian, 1974).

In terms of the early emotional research in SLA, some have adopted the Affective Filter Hypothesis (Krashen, 1985), which posited that four affective factors, including motivation, attitudes, self-confidence, and anxiety, influence how effectively language input is processed and absorbed by screening input language. Krashen's (1985) main viewpoints entail that an increased affective filter can inhibit input, whereas a lowered affective filter can promote the language input to be acquired (Du, 2009). Moreover, the affective filter plays a crucial role in accounting for the individual differences in the process of SLA and language learning. This theory has laid the theoretical foundation for many empirical studies in SLA (e.g., Rahman et al., 2019; Chen, 2020). Although this theory has made much contribution to explaining the potential effects of emotions on learners' language acquisition, the affective filter has been criticized for its limitations in L2 emotional research, like oversimplification of the emotional factors and underlying mechanisms and overemphasis on language input. Meanwhile, in the stages of the 70s and 80s, learner beliefs have been the main concern of researchers in the field of applied linguistics (AL). Given the inseparable relationship between cognition and emotion as recognized in AL (Gieve and Miller, 2006; Pavlenko, 2005) and the important role of identity in AL (Block, 2007), there was a crucial need to understand the interrelationship between beliefs, identities, and emotions. For example, Barcelos (2015) has elaborated on the reciprocal relationship between beliefs, identities, and emotions and concluded that they were intrinsically and interactively related.

In addition, with the socio-cultural turn in the domain of SLA in the past two decades (Johnson, 2006), it also contributed to the shift of emotional research from the individual emotional development to the interaction between individual and social factors. One of the representative theories is the Socio-Cultural Theory (SCT) (Vygotsky, 1987), which posits that there is not only the development of cognition but also the generation of emotions when engaged in human activities. Compared to the

traditional psychology that separated the emotions and cognitions, SCT highlights viewing learners' emotional experiences from a holistic perspective (Qin et al., 2022). In terms of the emotional experience, some scholars put the emphasis on the features of emotions, with the focus on the types of emotions and their development (e.g., Mok, 2015), whereas other academics perceived the emotional experience as the interplay of affect and cognition, showing the complex and comprehensive characteristics (e.g., Fleer et al., 2017; Qin et al., 2019). Similarly, social constructivism shares some similarities with SCT, which emphasizes that emotions are socially constructed and that language is crucial in developing and expressing the emotions. Panayiotou (2006) once contended that every language contains its own way of describing the world, including its own uses of emotion words. This constructs the way people in that culture experience emotions (Oxford, 2015). In other words, emotions that seem important in some cultures may not be linguistically existent in others.

Later, with the particular affective shift to positive emotions in the early 2010s, the flourishing development of Positive Psychology (PP) in SLA has brought novel theoretical approaches to theorize emotional causation in empirical studies. One major theory of PP is the Broaden-and-Build Theory (BBT), which addresses the significant effect of emotions. According to the Broaden-and-Build Theory, positive emotions tend to contribute to expansive thinking that broadens an individual's attention, cognition, and action, whereas negative emotions more likely narrow a person's scope of thinking and consciousness. More specifically, Fredrickson (2013) elaborated on the ways positive emotions function: (a) broaden thought-action repertoires, (b) undo the lingering effect of negative emotions, (c) boost psychological resiliency, (d) build personal resources, and (e) promote psychological and physical wellbeing. The BBT highlights the fundamental role of positive emotions, which have been marginalized in traditional psychological research, in affecting learners' learning and performance. Also, it differentiates the divergent functions and effects of both positive and negative emotions, which may provide a holistic lens for empirical studies (Fredrickson, 2001). Moreover, BBT points to the interplay between positive and negative emotions, which may serve as a theoretical underpinning in the emotional interaction research.

In addition to BBT, another basic theory from PP is concerned with the "EMPATHICS" model of wellbeing (Oxford, 2016). This theoretical model was developed from the "PERMA" model (Seligman, 2011), which represents positive emotions, engagement, relationship, meaning, and accomplishment. Later, Oxford (2016) expanded it into a nine-dimension framework. In terms of the nine-dimension model, Oxford (2016) emphasized that it does not intend to present a taxonomy. Instead, Oxford (2016) supported adopting a CDST perspective to examine the complex and holistic relationships between various dimensions with much attention to the social and cultural context. Although this theoretical model has rarely been used in exploring learners' emotions, it highlighted the non-linguistical goals in language learning, which advanced the traditional research in SLA with a mere focus on linguistic goals. What's more, emotional intelligence (EI), as one of the core concepts of the "EMPATHICS" model (Oxford, 2016), has gained extensive attention, particularly in the field of PP, whose

ultimate goal is to facilitate human survival and success and improve human wellbeing (Allen et al., 2014). The theoretical framework of EI includes four emotion-related abilities: (1) perceiving and evaluating emotions; (2) accessing and expressing positive emotions; (3) understanding own and others' emotions; (4) managing and regulating own and others' emotions (Mayer and Salovey, 1997). Later, Petrides and Furnham (2001) differentiated two types of EI: trait EI and ability EI, with the former focusing on self-perceived personality traits on emotions and the latter highlighting one's situated and actual emotion-related competence. A number of empirical studies have confirmed the theoretical links between EI and emotions (e.g., Dewaele, 2013; Yu et al., 2015). Nonetheless, there is still a lack of research addressing the relations between EI and positive and negative emotions.

As for the emotional effect, the cognitive-motivational model of emotion effects (Pekrun, 2006) proposes that the effects of emotions on learners' L2 learning and performance are determined by the interaction with cognition and motivation, such as learners' learning strategies and motivational regulation. This model highlights how emotions, influenced by the interconnection with cognitive and motivational processes, play a crucial role in directing learners' thought and guiding their behaviors. More specifically, emotions can facilitate the adoption of various learning strategies, ranging from flexible approaches like elaborating on learning materials to more rigid methods such as basic rehearsal. Emotions can also drive distinct regulatory approaches, encompassing both autonomous self-regulation and externally facilitated regulation of learning processes (Pekrun and Perry, 2014). Moreover, emotions are believed to influence students' intrinsic motivation, driven by their interest and curiosity in learning, as well as their extrinsic motivation, which focuses on achieving desirable outcomes or avoiding undesirable ones. Besides, in terms of the relation between emotions and motivations, the L2 Motivational Self System (MSS), proposed by Dörnyei (2005), has also provided a theoretical framework to explore the interrelation between emotion and L2 motivations. As the discrepancies within the L2 self-conceptions, as sources of motivation, can lead to different emotional states, the L2 MSS can not only shed light on L2 learners' motivation but also provide insights into the causation of emotions (Papi, 2010).

Another theory that contributes to the conceptualization and causation of emotion is the Control-Value Theory (CVT). Under the CVT, emotions are conceptualized as achievement emotions, referring to emotions that are directly associated with achievement activities or outcomes in educational contexts (Pekrun, 2006; Pekrun and Perry, 2014). CVT highlights that the appraisals of control and value in achievement settings are the most proximal determinants of L2 learners' emotions. Based on the control-value theory, a three-dimensional taxonomy is classified according to valence (positive or negative quality), control (the degree of controllability), and object focus (activity or outcome). The most distinctive feature of CVT in conceptualizing emotions is that it expands the traditional perspectives, such as expectancy-value theories (Pekrun, 1992) and attributional theories of emotions (Weiner, 1985), by integrating these theoretical approaches for analyzing the diverse achievement emotions and addressing these emotions from a holistic perspective. According to the CVT, learners' perceived controllability and value of academic activities

or outcomes are presumed to affect their achievement emotions. Specifically, when students have a high level of control and high positive value over the activities or outcomes, they will experience positive emotions, whereas when students feel a low level of control and high negative value, they may experience negative emotions (Pekrun et al., 2017). From the aspect of emotion causations, CVT highlights distinguishing the distinctive functions of diverse achievement emotions in affecting learners' cognitive, social, and psychological processes. More importantly, CVT classifies achievement emotions based on three dimensions, which take the temporal features of emotions into consideration by categorizing them into prospective, retrospective, and concurrent emotions. Also, CVT is unique in that it addresses the reciprocity and bidirectionality of emotions, which indicates that CVT can serve as a theoretical foundation for a broader range of empirical research, positioning emotions as both dependent and independent variables. However, CVT is not without limitations. It exclusively focuses on achievement-related emotions, which may not offer a holistic perspective of learners' various types of emotions. Given the wide range of emotions in language classrooms, emotions in SLA extend far beyond the domain of achievement emotions. Emotions with relation to "the contents of learning and teaching, to the process of cognitively generating knowledge, and to social interactions in the classroom" are equally important (Pekrun and Linnenbrink-Garcia, 2014, p. 3). Hence, it suggests that according to the three-dimensional taxonomy, there are at least four distinct groups of emotions that deserve more attention: achievement emotions, topic emotions, epistemic emotions, and social emotions (Pekrun et al., 2023). However, only a very few types of emotions, such as anxiety, enjoyment, and boredom, have been extensively researched in SLA.

Very recently, the inquiries into emotions in SLA have evolved significantly by conceptualizing emotions as a complex dynamic system (Wang et al., 2024). This new conceptualization can find its root in the Complex Dynamic System Theory (CDST), which has increasingly gained substantial attention and interests from L2 researchers (e.g., Elahi Shirvan and Talebzadeh, 2018; Yu et al., 2022). Compared to the previous traditional approach that viewed emotions as a stable trait-like variable and measured emotions by using homogenous and nomothetic techniques like Likert questionnaires, the CDST approach views emotion as a situated and context-dependent variable and addresses the dynamicity and complexity of emotions. CDST represents an epistemological approach that emphasizes a holistic understanding of systems and posits that phenomena are not made up of merely isolated components but of interconnected networks where elements interact dynamically and evolve over time (Han et al., 2023). Grounded in this framework, the investigation into emotional variables in language learning has led to innovative research orientations. Focusing on the emotion cautions, researchers taking CDST as a starting point presume that the dynamics of emotions arise from the interplay between cognitive, social, contextual, and psychological factors, thus contributing to the variations of language learners' behaviors and performance (Wang et al., 2024). What makes this theory distinct is that CDST highlights viewing the causal relations of emotion from a complex and dynamic lens, which provides a more in-depth understanding of the nature of emotions. This novel theoretical framework has

also shed insight on the innovative methodological approaches (see Hiver and Al-Hoorie, 2019 for a review) compatible with the dynamic characteristics of emotions, pointing out the future research directions for the investigation of emotions in SLA. For example, Wang et al. (2024) have proposed a novel interpretation of emotions by integrating both macro and micro perspectives through the experience sampling method and the idiodynamic method, respectively, aiming to provide a more detailed understanding of the dynamic interplay of emotions in language learning. Freeborn et al. (2023) has elucidated how network analysis can be used as a novel technique to explore the complex systems in SLA by modeling the structural relation among the influential factors.

3 Empirical studies of emotions in SLA

A large number of emotional studies in SLA have been conducted from different aspects of emotional research. One strand of emotional inquiry into the causal relationship between other variables is the current research focus. In recent years, the majority of emotional studies have investigated the relationships between emotions and other correlates, including psychological, social, and contextual factors, such as motivation (Tian and McCafferty, 2022), cognition and language performance (Ma, 2022), and L2 achievement (Li, 2020). For example, Shao et al. (2020) examined the relations between achievement emotion and foreign language (FL) performance based on the CVT. The findings reveal a positive relationship between positive emotions and FL performance and a negative relation between negative emotions and FL performance. This finding resonates with Li's (2020) study, which combines both the CVT and BBT to explore the relationship between L2 learners' emotions (anxiety and enjoyment) and language achievement. In addition, drawing on L2 MSS, Papi (2010) examined the relations between ideal L2 self, ought-to L2 self, L2 anxiety, and L2 learning experience, revealing that the ideal L2 self and the L2 learning experience lowered students' English anxiety, whereas the ought-to L2 self significantly increased their level of anxiety. Moreover, building on the SCT, López (2022) explored the development of foreign language teacher identity under the influence of learning experiences, emotions, and socio-cultural context.

In terms of the causes or antecedents of emotions, certain individual and contextual factors have been reported to account for the causations of emotions. For example, drawing on the Emotional Intelligence Framework and PP, Li (2020) examined the effect of trait EI on L2 classroom emotions and L2 achievement. The results showed a positive relation between EI and FLE and EI and L2 achievement, which is in line with the findings in Chen et al. (2024). Moreover, Yang et al. (2021) adopted the CVT to explore the antecedents of learners' achievement emotions. The findings reveal that both individual (e.g., self-regulation) and environmental antecedents (teacher factors and peer factors) can affect students' achievement emotions. On the other hand, compared to the CVT, which exclusively relies on the learner-perceived appraisals of control and value of the activities or outcomes, CDST emphasizes taking a comprehensive view by including cognitive, psychological, individual, and environmental factors to account for the emotional

development. For example, [Huynh \(2021\)](#) adopted CDST to explore L2 anxiety in online language learning. The results found several factors that affected the dynamics of anxiety, such as learners' familiarity with the system, learner autonomy, teacher factor, and tasks.

4 Implications and directions for future studies

To conclude, the main goal of the present study was to provide a complementary review of emotion-related theories for emotional research in SLA. The theories centered on the conceptualization and causations of emotions in SLA were explained in detail. Specifically, emotions are conceptualized as a dynamic, non-linear and interconnected system under the CDST lens, which allows for a more in-depth understanding by combining “shorter-term and narrower-scope system (micro levels)” and “longer-term and broader-scope structures (macro level)” ([Wang et al., 2024](#), p. 105). By tracking the fluctuating trajectories of emotions over time, it can represent their “own unique patterns of peaks and troughs” at different timepoints ([Wang et al., 2024](#)). On the other hand, by highlighting the importance of investigating the dynamic interplay of factors at every single moment, it can capture the emergent, interconnected, and complex nature of emotions by identifying how various cognitive, psychological and contextual factors interacts.

Moreover, the application and contributions of these theoretical frameworks were also illustrated with the support of empirical evidence. From the literature reviewed, it can be acknowledged that emotions in language learning show the properties of complexity and dynamics. Due to this, the effect of emotions on language learning and performance can be complex, depending on the types of emotions. Besides, the causes or antecedents of emotions can be dynamic and diverse, involving a rich variety of factors as well as the interplay between them. However, the influential factors seem to have not been adequately investigated nor sufficiently theorized. Therefore, it deserves further exploration in the future emotional research.

These findings can be thought-provoking for both language teachers and researchers in emotional research in SLA. It is suggested that language teachers should implement emotional interventions, such as attributional restraining ([Hall et al., 2016](#)), mindset intervention ([Dong, 2022](#)), and value induction ([Harackiewicz and Priniski, 2018](#)), to help promote students' perceptions of control and/or value of tasks. Language teachers are also advised to be aware of their emotions, behaviors, and teaching style in order to influence students' positive emotions through emotional contagion ([Frenzel et al., 2018](#)). [Zhao and Wang \(2024\)](#) have explored the causes and consequences of emotional exhaustion as well as provided a theoretical framework on regulation strategies for EFL teachers, which might help teachers regulate their emotions through the preventive and responsive

ways. On the other hand, researchers in L2 emotions may use and even combine the established theories of emotions to guide their empirical exploration. Meanwhile, they can expand the existing theories of emotions by considering emotions in diverse learning contexts, such as technology-enhanced classroom learning ([Butler, 2017](#)) and digital settings ([Lee and Lee, 2020](#)), as well as in the four specific skills in language learning, such as L2 listening ([Wang and MacIntyre, 2021](#)) and writing class ([Ariyanti et al., 2023](#)). [Wu et al. \(2024\)](#) have investigated the role of artificial intelligence (AI) in affecting EFL learners' emotional engagement and behavioral intention, which may shed light on future emotional research by integrating AI applications in language learning. Moreover, L2 researchers should also extend the research designs and methodological approaches compatible with the adopted theories in future research. When investigating the L2 emotions from the CDST lens, researchers should consider integrative designs by drawing both qualitative and quantitative methods, such as the idiodynamic method, to advance the knowledge in the dynamic and complex nature of L2 emotions in language learning ([Hiver et al., 2022](#)).

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The effects of gender, age and region on rural teachers' professional honor: an empirical analysis of survey data from seven provinces in China

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Professional honor is a critical factor shaping the recruitment and retention of teachers in rural China. This study examines the influence of demographic factors—gender, age, and region—on professional honor among 1,320 rural teachers across seven Chinese provinces. Using confirmatory factor analysis (CFA), the reliability of the professional honor scale was established ($\chi^2/df = 6.249$; RMSEA = 0.063). Comparative analyses revealed significant differences: female teachers reported higher levels of professional honor than their male counterparts; teachers in the Eastern Region exhibited greater professional honor than those in the Western Region; and teachers aged 31–40 displayed the lowest professional honor among all age groups. A multiple regression analysis identified gender, age, and region as significant predictors of professional honor, with gender moderating the relationship between public professional honor (PuPH) and personal professional honor (PePH). These findings have significant implications for addressing challenges in rural teacher prestige, including workforce feminization, age-related dynamics, and teacher migration from Western to Eastern regions. Recommendations are proposed to mitigate these challenges and enhance teacher retention in rural schools.

KEYWORDS

rural teacher, professional honor, professional identity, sense of professional honor, teacher feminization, age crisis, teacher turnover

1 Introduction

In many countries, rural schools face problems of increasing feminization of the profession, ageing of the workforce, and turnover from less developed regions to more wealthy regions (Chen, 2011; Che, 2020; Ghuman and Lloyd, 2010; Liu et al., 2022; Mills et al., 2004). These problems potentially weaken the quality of teachers in rural areas and affect students' academic achievement (Kalogrides et al., 2013; Shikalepo, 2020). As a consequence, this hampers the improvement of rural education, especially in developing countries (Cuervo and Acquaro, 2018).

Honor is seen an important factor that can influence a person's behavior (Cooley, 1999; Bayefsky, 2013), such as choosing to enter or to leave a particular profession. However, empirical study on the influence of honor in the teaching profession is lacking (Rimon-Or et al., 2023; Wang et al., 2024). This study examined the influence of gender, age, and region on professional honor to explore possible causes and potential avenues for solutions for the

problems faced in rural schools. This research aims to benefit the understanding and appreciation of teachers in rural areas of the international community.

2 Literature review

2.1 Fundamental concepts: honor and professional honor

Honor is a concept that is prominent in many societies around the world. A variety of definitions of honor exist; for example, [Schopenhauer \(1901\)](#) defines honor as the objective opinion others hold of our value and our fear of that opinion ([Welsh, 2008](#)). For [Pitt-Rivers \(1966\)](#), honor is not only the value that society places on a person but also their own sense of personal value. Similarly, [Stewart \(1994\)](#) identifies internal and external aspects of honor, represented as public and personal honor. Public honor is often linked to rank, wealth, or public respect, while personal honor relates to the nobility and integrity of one's mind and character ([Krause, 2002](#); [Sessions, 2010](#)). Although honor may not currently be a common expression in some regions of the world, [Brandes \(1987\)](#) notes that the term could nonetheless be treated as a combination of commonly recognized attributes such as esteem, respect, prestige, and status, depending on local usage.

Teachers' professional honor is an intersubjective phenomenon determined by teachers' own feelings and those of their profession, local community, and government ([Hermanowicz, 2016](#)). However, there is no perfect equivalent concept to teachers' honor in the Western literature. Instead, the concept is, to some extent, captured by the literature as prestige. For example, in Western Anglophone countries, such as the UK and US, prestige is reflected in teachers' experiences of having a valued professional identity and a sense of dignity ([Hargreaves, 2009](#); [Hu, 1944](#); [Ingersoll and Tran, 2023](#); [Ivanchuk et al., 2020](#); [Rushton et al., 2023](#)). In contrast, in the East Asian literature, teachers' professional honor is tightly linked with their social status in a hierarchy and corresponds to a sense of collective belonging and professional accomplishment ([Leung and Cohen, 2011](#); [Liang and Gao, 2020](#); [Wang et al., 2024](#)). Studies of honor in social interactions highlight differences between other regions, such as the Middle East, Sub-Saharan Africa, and Latin America (e.g., [Aslani et al., 2016](#); [Clarke et al., 2013](#); [Uskul et al., 2023](#)). This suggests that teachers' honor is also likely to vary across these regions. However, a literature search for these regions found no specific studies of teachers' professional honor.

In this study, professional honor is broken down into internal and external components, in alignment with the literature. Personal professional honor (PePH) is defined as individual teachers' intrinsic valuation of themselves and their work; and public professional honor (PuPH) is defined as the recognition of the value of teachers and their work by society ([Chen and Wan, 2019](#)). While both dimensions are tightly connected, they are arguably theoretically and practically distinct ([Ivanchuk et al., 2020](#); [Stewart, 1994](#)).

2.2 Linking professional honor to gender, age and region

Research shows that the honor of human beings is influenced by a large variety of factors including cultural context ([Appiah, 2011](#)),

international standing ([Lebow, 2010](#); [O'Neill, 2001](#); [Robinson, 2006](#)), political recognition ([Krause, 2002](#)), and income disparity ([Frank, 1985](#)). In the context of teaching, studies indicate professional honor is influenced by social respect, personal achievement, professional identity, salary, and reputation ([Kamani, 2017](#); [Liang and Gao, 2020](#); [Xie and Liu, 2019](#)). However, in the context of rural teaching, gender, age, and region may be additional factors since these are dominant disparities in the rural education workforce.

2.2.1 Gender and profession honor

Within a society, honor can often have a gendered component, as the asymmetrical honor codes regarding sexual chastity clearly demonstrate ([Demetriou, 2013](#); [Pomerantz et al., 2023](#)). In teaching, gender disparity also exists in different aspects, such as teachers' work pressure, cooperation efficiency, and management behavior ([Galanakis and Alamani, 2020](#); [Klimek, 2019](#)). Internationally, studies have found female teachers in rural areas have significantly greater professional satisfaction than male teachers ([Bowman, 2007](#); [Chapman, 1983](#); [Chen, 2017](#)). Research in China confirms this pattern: male preschool teachers' sense of professional honor was found to be much lower than female preschool teachers' ([Li and Xiao, 2019](#)), and male rural teachers also show a weaker professional identity and sense of inferiority relative to their female counterparts ([Dhal, 2021](#); [Lu, 2013](#)). Moreover, it has been argued that this low sense of professional honor is the fundamental reason for the declining proportion of male teachers in primary and secondary schools in recent years ([Zhang, 2021](#)).

2.2.2 Age and professional honor

Age has been presented as an essential measure of an individual's human capital ([Schultz, 1961](#)), and thus can indirectly influence professional honor. Research in various contexts demonstrate that productivity follows an inverted-U, with peak productivity during middle-age ([Bao et al., 2020](#); [Sturman, 2003](#); [Yang et al., 2024](#)). While studies suggest a general sense of well-being parallels this pattern ([Blanchflower, 2021](#); [Blanchflower and Oswald, 2008](#)), other research indicates that the peak period of performance can be accompanied by a middle-aged career crises and low emotional states ([Yan, 2020](#)). Thus, the link between age and professional honor may not be straightforward. In the Chinese context, one study found significant differences in preschool teachers' sense of professional honor at different ages, with the highest level of honor for teachers between ages 31 and 35 ([Li and Xiao, 2019](#)). This finding is replicated by [Liang and Gao \(2020\)](#) who find the professional honor of primary and secondary schoolteachers approximately follows the inverted U curve as their careers progress.

2.2.3 Region and professional honor

The region in which one works can influence the sense of professional honor, and this is often based on the culture and economic development of the region ([Wang and Zheng, 2010](#)). It has been noted that region honor is both the individual and collective responses to living in a given region ([Morrison, 2016](#)). Moreover, the identity of a region is argued to be becoming increasingly influential in the modern world ([Bell and de-Shalit, 2011](#); [Marek, 2022](#)). Studies in China demonstrate both a rural-urban difference in professional honor, and a difference in honor between teachers in different rural areas. As might be anticipated, teachers in rural areas have shown a lower sense of professional honor than those in urban areas ([Lu, 2013](#); [Wang et al., 2024](#)). Teachers in Eastern rural areas report higher feelings of pride in their identity as teachers relative to Western rural

areas, and those in Western and Middle areas prefer to move to work in schools in the Eastern region, resulting in high teacher turnover (Hao, 2021; Miao, 2009).

Overall, there is sufficient evidence to suggest that gender, age, and region warrant investigation as influences on the professional honor of teachers, especially in rural China. However, the strength of these influences and how they interact is currently unknown, so investigating these factors can be useful for producing interventions which may reduce some of the problems within the teaching profession in rural areas.

3 Research questions

The importance of gender, age, and region for professional honor is particularly pertinent in the Chinese context since there are significant imbalances in these factors in rural education. First, the rural teaching workforce has a high proportion of female teachers: 97.61% in preschool education institutions; 72.29% in primary schools; 59.77% in junior secondary education; and 56.64% in senior secondary schools (Ministry of Education of the People's Republic of China, 2023). Additionally, rural areas have a higher percentage of teachers older than 55 years: 8.8% in rural areas and 3.3% in urban areas (Wu and Qin, 2022). Finally, different regions have different levels of teacher turnover, as teachers migrate from Western and Middle regions to the East (Jiang et al., 2023; Wang and Lei, 2017; Zheng et al., 2017). In fact, one rural school had a 45.5% turnover rate of newly recruited teachers over 5 years (Sha, 2019).

Considering the feminization, ageing, and turnover of the rural teacher workforce is significant and can potentially hamper the development of rural education systems, understanding how these aspects relate to professional honor may help produce policies that address the issues. Although some scholars have theorized a relationship between professional honor and gender, age, and region, existing studies focus only on a single characteristic each, so there are currently no comprehensive empirical studies. This study attempts to fill that gap by exploring the following issues:

- Research question 1: Are rural teachers' professional honor levels different according to gender, age, and region?
- Research question 2: Which demographic factors, including gender, age, and region, predict professional honor?
- Research question 3: Do gender, age and region moderate the relationship between public and personal professional honor (PuPH and PePH)?

4 Materials and methods

4.1 Data sources and procedure

Data were collected in China through questionnaires. From May 31, 2016, to July 31, 2016, teachers in primary, secondary and senior schools and kindergartens were invited to participate by local government educational management departments and by principals of rural schools. We choose seven provinces to represent the different

regions in China, namely Jiangsu and Shandong (Eastern); Shanxi, Heilongjiang, and Henan (Middle); and Gansu and Ningxia (Western). A total of 1,361 questionnaires were collected from teachers in rural areas in these provinces. After the data were filtered for incomplete responses, 1,320 valid questionnaires remained, and the effective questionnaire recovery rate was 96.98%. The sample details are shown in Table 1.

4.2 Variables measure

The measurement instrument for rural teachers' professional honor was designed based on a questionnaire for professional external prestige (PEP) (Herrbach et al., 2004) and the Others' Approval subscale of the Contingency of the Self-Worth Scale (CSWS) (Briganti et al., 2019; Crocker et al., 2003). The instrument used a 5-point Likert scale (from 1 = absolutely disagree to 5 = absolutely agree). Eight items of the original questionnaires were expanded to 10 items. The instrument included two subscales: public professional honor (PuPH) and personal professional honor (PePH).

Public professional honor (PuPH): There were four questions in the PuPH subscale: (A1) "Currently, a primary or secondary school teacher is highly respected"; (A2) "The current status of teachers is glorious and sacred"; (A3) "At present, the honor system for teachers is widely recognized in the society."; and (A4) "Citizens currently greatly respect teachers who have won awards."

TABLE 1 Demographic characteristics of the rural teacher sample.

Variables	Category	N	Ratio (%)
Gender	Male	595	45.1
	Female	725	54.9
Age	–30	181	13.7
	31–40	557	42.2
	41–50	408	30.9
	51 +	174	13.2
Academic Stage (Xueduan 学段)	Preschool	59	4.5
	Primary School	710	53.8
	Junior School	457	34.6
	Senior School	94	7.1
Education Level (Xueli 学历)	Technical Senior School	38	2.9
	Junior College	289	21.9
	Undergraduate	969	73.4
	Master Degree+	24	1.8
Professional Title (Zhicheng 职称)	None	79	6.0
	Second Grade	401	30.4
	First Grade	666	50.5
	Deputy Senior	168	12.7
	Senior	6	0.5
Region	West	385	29.2
	Mid	578	43.8
	East	354	26.8

Personal professional Honor (PePH): There were six questions in the PePH subscale: (B1) I hope to be an excellent primary or secondary school teacher; (B2) I feel what I am doing as a teacher is significant; (B3) In my work, I feel a sense of meaning and the realization of personal value; (B4) I feel proud of my teacher identity when communicating with others; (B5) I can fully enact my talents and realize my value as a teacher; (B6) I think that I deserve to respect as a teacher.

4.3 Analytical strategies

To test the construct validity of the professional honor measurement scales, we conducted a series of confirmatory factor analyses (CFA) and made modifications. The CFA were conducted through Mplus 8.7.

To address research question 1, we generated descriptive statistics for gender, age and region, and then analyzed the mean value, standard deviation, and correlations between the indicators of teachers' professional honor in rural areas using independent sample *t*-tests and one-way ANOVA.

To address research question 2, we first transformed categorical variables to dummy variables. A multiple linear regression model was then used to test the significance of gender, age and region in predicting teachers' professional honor. Next, we conducted structural equation modelling (SEM) with PuPH posited as the predictor of PePH.

To address research question 3, we tested the moderation effect of gender, age, and region on the relationship between the public and personal dimensions of professional honor in Mplus 8.7 (Figure 1). Maximum likelihood estimation (MLE) method was applied to estimate parameters because MLE methods provide unbiased estimates (Schafer and Graham, 2002) and are efficient at estimating latent variable models based on either normally or non-normally distributed scores and items rated on scales including five or more response categories (Rhemtulla et al., 2012). The framework of the data collection and analysis is shown in Figure 1.

5 Results and analyses

5.1 Measure instrument construct validity

Eleven items were originally included in the instrument. However, a Confirmatory Factor Analysis resulted in fit indices of: $\chi^2 = 934.796$, $df = 43$ ($p < 0.001$), $\chi^2/df = 21.739$; RMSEA = 0.125; SRMR = 0.067; CFI = 0.875; and TLI = 0.840. We inspected the factor loading and Cronbach's alpha coefficients for all factors to improve the model fit. One item for PePH had low factor loadings and related more to the honor of other teachers rather than oneself, so it was deleted. A second CFA with this problematic item omitted had significantly improved measures of model fit: $\chi^2 = 193.720$, $df = 31$ ($p < 0.001$), $\chi^2/df = 6.249$; RMSEA = 0.063; SRMR = 0.035; CFI = 0.975; TLI = 0.963 (see Table 2). Cronbach's alpha reliabilities of the two subscales were 0.785 (PuPH) and 0.877 (PePH), and the Cronbach's alpha of the overall profession honor scale was 0.875, which indicated an acceptable internal consistency (Brown, 2015; Chen and Zhang, 2022) (see Table 2).

5.2 Difference test of professional honor

The Confirmatory Factor Analysis was conducted, KMO = 0.869, Bartlett's Test was significant ($p < 0.01$). The Factor scores for PePH were always greater than those for PuPH, with an overall factor score of 3.745 for PePH and 2.741 for PuPH. The mean for male teachers is lower than that for female teachers in overall professional honor, and the results of an independent sample *t*-test showed a significant gender difference [$t = -9.738$, $p < 0.001$]. Moreover, for both personal and public professional honor, the mean for male teachers was lower and differed significantly [PuPH: $t = -6.904$, $p < 0.001$; PePH: $t = -9.417$, $p < 0.001$]. The mean for male teachers ($M = 3.510$) is lower than that for female teachers ($M = 3.937$) in PePH, the gender difference was also significant [$t = -9.417$, $p < 0.001$]. Therefore, the data show that the professional honor of rural female teachers is consistently and significantly greater than that of male teachers.

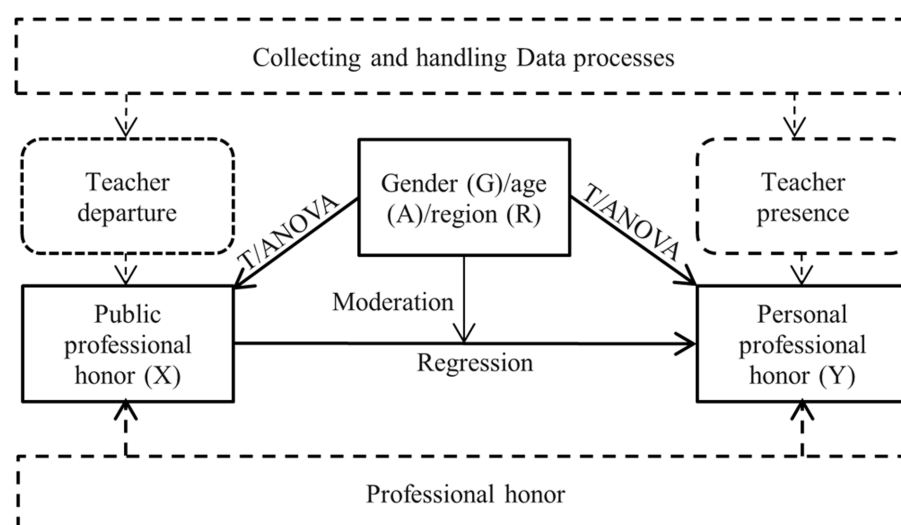


FIGURE 1
Data collection and analysis framework.

TABLE 2 Description statistics, factor loadings and Cronbach's alpha reliabilities.

Factors and items	M	SD	Cronbach's alpha	Factor loading(SE)
Professional Honor	3.380	0.724	0.875	
PuPH	2.741	0.867	0.785	
(A1) Now people are great respected to a primary and secondary school teacher.	2.677	1.161		0.760 (0.026)
(A2) The current status of teachers is glorious and sacred.	2.645	1.193		0.780 (0.026)
(A3) At present, the honor system for teachers is widely recognized in the society.	2.896	1.053		0.4752 (0.027)
(A4) The public now has great respect for teachers who have won Honors.	2.744	1.034		0.534 (0.025)
PePH	3.745	0.836	0.877	
(B1) I hope to be an excellent primary and secondary school teacher.	4.108	0.928		0.527 (0.022)
(B2) It is very meaningful what I am doing as a teacher.	4.016	0.915		0.682 (0.016)
(B3) I feel the meaning and return of work in the realization of personal value.	3.629	1.043		0.734 (0.015)
(B4) I feel proud of my teacher identity during social communication.	3.490	1.191		0.839 (0.011)
(B5) I can fully practice my talents and realize the life value as a teacher.	3.628	1.082		0.867 (0.009)
(B6) I think I deserve to respect as a teacher.	3.597	1.181		0.700 (0.016)
(B7) My colleagues deserve respect.*				

* The item was deleted.

Second, we conducted a one-way ANOVA with age as a categorical variable. The results showed a significant difference in the overall professional honor of rural teachers by age [$F(3,1,316) = 15.230, p < 0.001$]. There was also a significant difference in age for PuPH [$F(3,1,316) = 14.062, p < 0.001$] and PePH [$F(3,1,316) = 10.687, p < 0.001$]. PePH tended to increase gradually with age. However, for PuPH, there is a fluctuation with age, and the mean score of 2.621 between 31 and 40 years is the lowest among the different ages. The results a Least Significant Difference (LSD) *post hoc* test revealed no significant difference in the average score between teachers 31–40 years old and those under 30. However, there were significant differences ($p < 0.01$) between teachers 31–40 and 41–50 years old and over 51 years old. Since the lowest level of PuPH is in the 31–40 age group, it might be considered a personal professional honor mid-age crisis.

Finally, we conducted a one-way ANOVA with region as a categorical variable. The results show that teachers' professional honor scores from the West to the East gradually increase in China, and the means of the Western, Middle and Eastern regions are 3.012, 3.470 and 3.499. This pattern is reflected in both PuPH: 2.427 (West), 2.863 (Mid), 2.885 (East); and PePH: 3.402 (West), 3.875 (Mid), 3.908 (East). From the LSD for overall professional honor, we found a significant difference between the West Region and the East Region, and the West Region and the Middle Region ($p < 0.001$). The Eastern and Middle regions had no significant differences (Table 3).

5.3 Regression model of rural teachers' professional honor

We conducted a regression analysis to explore whether gender, age and region can predict rural teachers' professional honor. We used professional honor, PuPH, and PePH as dependent variables; and gender, age, and region as the independent variables. Other variables as control variables were education background, academic stage, and professional title. We transformed the

categorical variables (gender, age, region) into dummy variables, and then conducted stepwise multiple regression.

In the professional honor model (Table 4), gender (male: $\beta = -0.218, p < 0.001$), age (51+: $\beta = 0.151, p < 0.001$), and region (West: $\beta = -0.186, p < 0.001$) predict rural teachers' professional honor, and 17% of total variation was explained.

The PuPH model explained 12.5% of the total variation. Being male negatively predicts rural teachers' PuPH ($\beta = -0.156, p < 0.001$). Compared with teachers under 31–40, the beta values of teachers under 30, 41–50, and over 51 years old are all positive, indicating they positively predict PuPH. However, only for teachers over 51 years old was a significance level reached, ($\beta = 0.124, p < 0.001$). Compared with the Mid-region reference group, the Western region negatively predicts the PuPH of rural teachers ($\beta = -0.171, p < 0.001$).

Similarly, Model PePH explained 14.5% of the total variance. Gender also negatively predicts PePH ($\beta = -0.214, p < 0.001$). Teachers being older than 51 years positively predicts the PePH of rural teachers ($\beta = 0.138, p < 0.001$), compared with the 31–40 reference group. Again, the Western Region negatively predicts the PePH of rural teachers ($\beta = -0.157, p < 0.001$) (see Table 4).

5.4 Moderation model of rural teachers' professional honor

Moderator effect analysis was used to explore when the independent variables affect the dependent variables (Baron and Kenny, 1986; Muller et al., 2005). We explored how gender, age and region moderated both dimensions of the professional honor of rural teachers. The analysis showed significant differences in the variables of gender, age and region can positively predict teachers' PePH. Therefore, we used PePH as the dependent variable and PuPH as the independent variable to further test the moderating effect of gender, age, and region. We also analyzed how rural teachers' PuPH influences PePH according to gender, age, and region. The regression equations were as follows:

TABLE 3 Difference test of professional Honor.

Variables		N	PuPH			PePH			PH		
			M	SD	t/F	M	SD	t/F	M	SD	t/F
Gender	M	595	2.562	0.899	−6.904***	3.510	0.903	9.541***	3.131	0.797	−9.738***
	F	725	2.887	0.812		3.937	0.723		3.517	0.644	
Age	−30	181	2.674	0.909	14.062***	3.575	0.954	10.687***	3.214	0.815	15.230***
	31–40	557	2.621	0.831		3.683	0.825		3.258	0.719	
	41–50	408	2.784	0.857		3.784	0.786		3.384	0.712	
	51+	174	3.091	0.864		4.028	0.785		3.653	0.717	
Region	West	385	2.427	0.832	37.916***	3.402	0.927	49.473***	3.012	0.771	59.409***
	Mid	578	2.863	0.823		3.875	0.738		3.470	0.669	
	East	354	2.885	0.889		3.908	0.774		3.499	0.713	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

$$Y = \alpha + \beta_1 X + \beta_2 S + \beta_3 X \times S + \varepsilon \text{ (Model - G)}$$

$$Y' = \alpha' + \beta_1' X + \beta_2' A + \beta_3' X \times A + \varepsilon' \text{ (Model - A)}$$

$$Y'' = \alpha'' + \beta_1'' X + \beta_2'' R + \beta_3'' X \times R + \varepsilon'' \text{ (Model - R)}$$

$$Y_{it} = \alpha_{it} + \beta_{it1} X_{it} + \beta_{it2} S_{it} + \beta_{it3} A_{it} + \beta_{it4} R_{it} + \beta_{it5} X_{it} \times S_{it} + \beta_{it6} X_{it} \times A_{it} + \beta_{it7} X_{it} \times R_{it} + \varepsilon_{it} \text{ (Model - T)}$$

In the construction equation model, Y is PePH, X is PuPH, S is gender, A is age, R is region, α is a constant, and ε is the residual of the equation. Gender, age, and region, are categorical variables.

As Table 5 shows, PuPH significantly and positively predicts PePH throughout the four models (<0.001).

In Model G, the interaction effect between gender and PePH was significant ($t = 4.434$, $p < 0.001$) showing that gender moderates the relationship between PuPH and PePH. In Model A, the interaction effect between age and PuPH was nonsignificant, which shows that age does not moderate the relationship between PuPH and PePH. In Model R, the interaction effect between region and PuPH is significant ($t = -2.454$, $p < 0.05$), which shows that region moderates the relationship between PuPH and PePH. However, we found that only the gender variable had a significant moderating effect on the relationship between PuPH and PePH in Model T. Therefore, we constructed a measurement diagram of Model G considering that it is relatively parsimonious and produced the largest R^2 value (refer to Table 5 and Figure 2).

6 Discussion

Rural education in China faces the issues of feminization, ageing, and high turnover, which exacerbates the disadvantages of rural schools. Similar problems exist in many other countries (Cuervo and Acquaro, 2018; Ghuman and Lloyd, 2010; Kalogrides et al., 2013; OECD, 2022). This study found that rural teachers' professional honor could play an important role for addressing these problems.

6.1 Professional honor and feminization of rural teachers

Internationally, over the past decades, the proportion of female teachers has increased across various educational stages. According to the OECD (2020), the percentage of male teachers in primary schools was 18%; in junior high schools, 33%; and in senior high schools, 40%. This gender disparity is even more pronounced in rural China (Xu and Zhang, 2021). In general, across the world, the career trajectories of men and women are clearly differentiated (Schultheiss, 2020; Thornton and Bricheno, 2009). Scholars have explored the historical, social, and cultural factors that have contributed to the growing presence of women in the teaching profession (Appleby, 2014). In the opposite direction, research on male teachers shows one of the critical reasons for the high turnover rate is low professional honor and lack of attractiveness of rural teaching occupations (Cacouault-Bitaud, 2001; Zheng et al., 2017). The results of the present study are consistent with these findings. Teaching in middle and primary schools does not seem to currently provide the desired level of recognition that male teachers seek. Possible causes for this are discrimination and marginalization (Wright, 2024); social isolation within female-dominated workplaces (Cruikshank et al., 2021); and negative portrayal of male teachers in society/media (Reid et al., 2019).

In traditional Chinese culture, men place relatively greater emphasis on their social status, and thus their honor (Hu, 1944). "Shi (仕) culture" is a masculine value in China. Historically, those who were successful in the examination known as kejukaoshi (科举考试) were granted government official positions, becoming "shi" and achieving high social status (Weber, 2018). Currently, teachers are government workers in China, and the public civil service is still regarded as an honorable career choice (Wang et al., 2023). As a result of the focus on professional honor, young men often aim to work in civil service jobs (Ng and Gossett, 2013). Thus, improving the social status of rural teachers can have a more significant influence on male teachers than female teachers (Topchyan and Woehler, 2021). Government could therefore address the feminization of the teaching profession by developing policies and initiatives to increase the sense of honor in the teaching profession. This approach would also apply in countries such as Egypt, Korea, and Vietnam, where civil service is considered an honorable profession (Phan and Bae, 2021; Barsoum, 2015).

TABLE 4 The regression on rural teachers' professional honor.

Explanatory variables			PuPH	PePH	Professional honor
Control variable	Academic Stage	Preschool	0.043	−0.038	−0.006
		Junior school	−0.065*	−0.095**	−0.095**
		Senior school	−0.008	−0.055	−0.041
	Education Level	Technical senior school	−0.010	−0.059*	−0.045
		Junior college	0.091*	0.015	0.052
		Master degree or above	0.028	−0.029	−0.006
	Professional Title	None	0.014	−0.017	−0.005
		Secondary grade	−0.043	0.010	−0.013
		Deputy senior title	0.009	−0.014	−0.005
		Senior title	0.028	0.009	0.020
Independent variable	Gender	male	−0.156***	−0.214***	−0.218***
	Age	−30	0.044	0.020	0.034
		41–50	0.048	0.057	0.061
		51+	0.124***	0.138***	0.151***
	Region	West	−0.171***	−0.157***	−0.186***
		East	0.047	0.041	0.050
R ²			0.125	0.145	0.168
F			11.658***	13.759***	16.397***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The following are the reference items for the dummy independent variables in the table: Gender is female; Age is 31–40 years; Region is the Middle Region; and for the reference items of the control variables: Academic stage is primary school; Education background is Undergraduate; Technical title is First grade.

TABLE 5 Personally professional honor moderation model test.

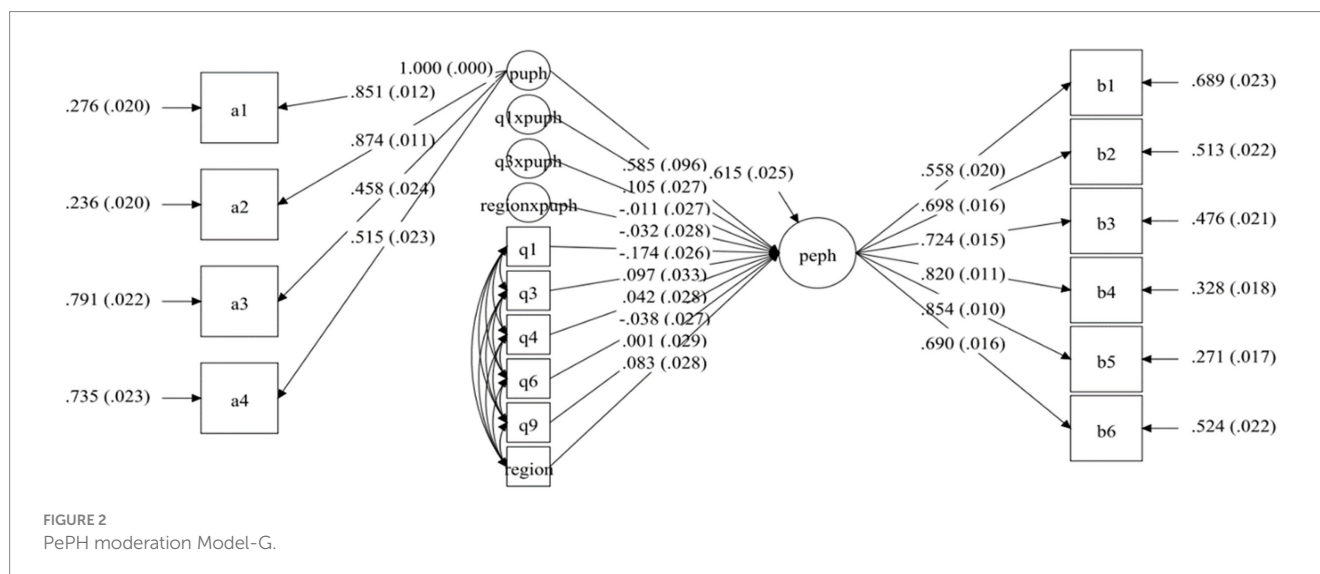
Variable	Model-G			Model-A			Model-R			Model-T		
	β	S.E.	Est./SE	β	S.E.	Est./SE	β	S.E.	Est./SE	β	SE	Est./SE
PuPH	0.474	0.035	13.752***	0.656	0.073	8.932***	0.761	0.073	10.416***	0.585	0.096	6.078***
Gender (Q1)	−0.347	0.051	−6.790***							−0.174	0.026	−6.695***
Gender × PuPH	0.234	0.053	4.434***							0.105	0.027	3.889***
Age (Q3)				0.111	0.031	3.643***				0.097	0.033	2.982***
Age × PuPH				−0.021	0.025	−0.830				−0.011	0.027	−0.419
Region							0.122	0.026	4.686***	0.083	0.028	3.005***
Region × PuPH							−0.064	0.026	−2.454*	−0.032	0.028	−1.162
Academic stage (Q6)	−0.047	0.038	−1.240	−0.082	0.027	−3.059**	−0.044	0.026	−1.688	−0.038	0.027	−1.407
Education Level (Q4)	0.069	0.049	1.421	0.087	0.027	3.245**	0.040	0.026	1.512	0.042	0.028	1.500
Professional Title (Q9)	0.077	0.032	2.437*	−0.003	0.029	−0.111	0.036	0.025	1.428	0.001	0.029	0.029
R ²	0.386			0.374			0.377			0.385		
Est. S.E	15.244***			14.454***			14.534***			15.466***		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

6.2 Age crisis of rural teachers' honor and excellent mid-age rural teachers' attrition

The rural teachers' professional honor was found to be lowest between the ages of 31 and 40, which aligns with the peak period of rural teacher turnover. While this result contrasts previous studies (e.g., Liu, 2019), this may be caused by the different samples, previous research limited to one province and preschool teachers. Previous research has found that age has a significant moderation effect on the

relationship between teacher motivation and turnover intention (Jiang et al., 2023). Various reasons have been proposed to explain this connection. First, the social care and support systems for teachers are relatively underdeveloped in China's rural areas (Jiang, 2021; Xue and Li, 2024). This arguably translates into a lack of social recognition and thus a diminished sense of professional honor (Li and Xue, 2023). Second, according to Robbins and Judge (2012), rural teachers between 30 and 40 often struggle to balance their professional and personal lives, leading to a loss of professional fulfilment. With limited



communication with the wider community and often living away from their families, teachers struggle to find a sense of belonging and purpose in their professional lives (UNESCO and International Task Force on Teachers for Education 2030, 2024), and this can undercut the development of professional honor. Finally, the principals of rural schools prefer mechanical and formal management styles (Zhou and Zhang, 2020), and rural teachers have limited opportunities to participate in school management, thus reducing the opportunities for advancing professionally and gaining social recognition. However, our results show that as rural teachers age, their professional identity tends to improve. The reasons for this phenomenon potentially include that rural teachers after the mid-career have accepted the reality of their social position and adopted to the rural lifestyle. In order to mitigate the slump of mid-career rural teacher professional honor, the government should implement a support system for middle-aged teachers in rural areas to improve their professional standing (Kohnke, 2024). The policies could involve two key areas according to Herzberg's motivation/hygiene theory (Herzberg, 1917). Firstly, improving their salary and helping teachers address familiar challenges of living in rural areas, and secondly, providing more opportunities to participate in school management, thus helping them to achieve higher status in their work (Jiang et al., 2023).

6.3 Professional honor and teacher turnover to more economically developed regions

The results show that rural teachers' professional honor is the lowest in the Western region, consistent with previous research (Hao, 2021). In China, teachers desire to move from rural areas to city schools, and from poor regions to more economically developed regions (Turhan and Memduhoglu, 2022). It is essential to note that rural professional honor does not always align with the salary of rural teachers. Research has shown that teachers in central provinces, such as Shanxi and Henan Provinces, have the lowest incomes, resulting in a 'middle region collapse' of teacher wages (Wang and Lei, 2017). However, as this study demonstrates, the professional honor of rural teachers in the Middle region is greater than in the Western region. Therefore, the conflict

between the professional honor of rural teachers and their income highlights the limitations of economic rationality as a policy tool (Li et al., 2024; Liu, 2020). Efforts to address high teacher turnover in rural regions ought to look beyond simple material compensation to take into account research showing that professional honor is the primary reward that attracts teachers (Liang and Gao, 2020; Wang et al., 2024). Strengthening the honor of rural teachers in the Western region, in particular, can be a pathway to improved teacher retention.

7 Conclusion

The data in this study shows that gender, age, and region significantly influence the professional honor of rural teachers. Additionally, gender moderated the relationship between PuPH and PePH. Assuming that the strength of professional honor influences rural teacher's motivation and affect, thus increasing the attractiveness of the career (Wang and Liu, 2016), low professional honor in rural areas may be a key cause of the feminization of the rural teaching profession and the high mobility rate of novice rural teachers (especially those in middle-age) from disadvantaged regions to wealthy regions. Considering that similar issues are observed in different countries (Ingersoll and Tran, 2023), professional honor is an important consideration for improving rural education.

This study has a number of limitations. First, it collects data at only one time point, specifically in 2016, during the early implementation of the "Rural Teacher Support Program" introduced by the Chinese central government. While the landscape of rural areas in China has undergone significant changes in the past decade—such as improvements in rural teachers' salaries—the urban–rural dichotomy and the fundamental status of rural teachers have not substantially changed. Therefore, the findings remain relevant for understanding rural teachers' professional honor, though the temporal nature of the dataset should be acknowledged when interpreting the results.

Additionally, while the data were collected from only seven provinces, the substantial sample size of 1,361 teachers provides valuable insights into the relationships between age, gender, region, and professional honor. Although the sampling was not completely random, efforts were made to ensure a diverse representation of rural

teachers across different regions. As with any study, there is a possibility that some imbalances in the sample may not fully reflect the broader population. However, the size and diversity of the dataset make it possible to offer meaningful findings and inform future research. While newer or more extensive data could further validate these conclusions and offer insights into recent developments, the current dataset remains a valuable resource for understanding the dynamics of rural teachers' professional honor.

The problem of attracting teachers to rural schools is a significant challenge in global education. Discussions addressing staff shortages tend to focus on distributing financial and material resources (Cuervo, 2023). Rural staffing challenges are not solely a matter of economic distribution but also encompass issues related to social attitudes towards teachers and education in rural areas. This study examines the relationship between gender, age, region and professional honor to elucidate the necessity for a reassessment of the social value of rural teachers. The theoretical framework is crucial for understanding the underlying causes of the problem of rural school staffing, including the feminization of the teaching profession, the attrition of mid-career teachers, and the migration of teachers from disadvantaged regions to wealthier ones.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Bridging cultures: the role of school's cultural diversity climate and cultural sensitivity in immigrant parents' school involvement

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Parents' involvement in children's education has been identified as a significant predictor of students' school achievement and psychological outcomes. In the case of immigrant parents, research has suggested that low educational levels, poor incomes, and pertaining to minority cultural groups negatively affect their participation in both school and home academic activities. Nevertheless, little is known about the influence of schools' approaches to cultural diversity and parents' intercultural competencies on their commitment to children's schooling processes. This study aims to examine the relationships between cultural diversity climate at school, cultural sensitivity, and school involvement among 751 Venezuelan and Peruvian immigrant parents settled in Chile and (2) to determine the possible influence of cultural sensitivity on the relationship between cultural diversity climate and parents' school involvement. Results show that sociodemographic variables had limited effects on their school involvement, while cultural diversity climate, and cultural sensitivity had a greater influence. Implications for understanding immigrant parents' relationships with schools and designing intervention programs are discussed.

KEYWORDS

immigrant parents, parental school involvement, cultural diversity climate, cultural sensitivity, intercultural education

1 Introduction

1.1 Parental school involvement

Parental involvement in children's education has been extensively studied over the past decades, particularly regarding its impact on students' positive development and academic success (Epstein, 2018). In fact, meta-analytic studies have indicated that parents' participation in children's school education predicts important outcomes such as school absenteeism and dropout (Gubbels et al., 2019), students' social and emotional adjustment (Barger et al., 2019), as well as their academic achievement (Kim, 2022; Wilder, 2023). In this way, parental school involvement can have a key role in promoting their wellbeing and the development of positive life trajectories in the future.

There is a consensus on the importance of encouraging parents to actively support their children's learning at home and participating in institutional and extracurricular school activities (Sandoval et al., 2017; Hoover-Dempsey et al., 2005). As such, parents' engagement in children's education has been understood as a type of social capital which allows them to benefit their children through their relationships with other parents and teachers (Murray et al., 2020; Turney and Kao, 2009). Involvement in education not only facilitates the transmission of the value of education but also provides parents with opportunities to access information and monitor their children's school lives (Domina, 2005).

To better understand parental school involvement, Hoover-Dempsey and Sandler (1995, 1997) developed a model focusing on the psychological processes that determine it. This model stresses the relevance of parents' motivational beliefs related to involvement, encompassing their role construction and self-efficacy in supporting their child's academic success. A second key element is related to parents' perceptions of involvement invitations from the school, which consist of specific requests to participate and the perception of a positive school climate. Besides, parents' personal life contexts are additionally considered factors that shape their views on the feasible forms and timing of involvement, such as their skills, knowledge, available time, and energy for engagement.

In a more comprehensive manner, therefore, parental involvement could be understood as an emergent outcome of a complex system of relationships between multiple levels of the environment that influence each other. According to a socioecological perspective (Bronfenbrenner and Morris, 1998), school involvement occurs through the interaction between two systems: one at the microsystem, within the home, and the other at the mesosystem level, which is the school. The microsystem encompasses immediate relationships, daily activities, significant life events, and surrounding environments, which often serve as foundational reference points. As such, children undergo primary socialization at this level, with the microsystem playing a crucial role in shaping parenting practices and cultural transmission (Seginer, 2006).

On the other hand, the success (i.e., academic) resulting from home-school collaboration between parents and children has also been identified as an important factor for parents' involvement development. Again, from a socioecological perspective, this second level (mesosystem) connects children to broader societal influences, such as parental involvement in school activities, which leads to parents becoming more engaged in their child's education (Bronfenbrenner and Morris, 1998). Besides a third level, the exosystem, encompasses contexts that do not directly involve students but still impact their experiences in the immediate environment and include factors such as parents' work conditions and health and welfare services, all supporting children's development. Importantly, this perspective emphasizes a central aspect of the present study: the complex relation of factors that can affect parental involvement, which is most evident in immigration dynamics.

1.1.1 Immigrant parents' school involvement

Most of the available research on immigrant parents' school involvement has been conducted in the United States, Europe, and Asia. In these contexts, it has been found low levels of participation in general, which, in turn, have been associated with parents' low socioeconomic status, language barriers, and low academic

expectations, as well as a presumed lack of interest in education (Calzada et al., 2015; Friedman et al., 2006; Li et al., 2020; González-Falcón et al., 2022). Moreover, it has been argued that lack of parental involvement could explain high rates of dropout and academic failure among immigrant students (González, 2022).

Likewise, the intersection of being an immigrant, low-income, and belonging to a cultural minority group altogether could lead to a more heightened mismatch of needs. This is because it increases the likelihood of schools successfully recognizing these parents' academic knowledge and cultural backgrounds, hindering their participation (Antony-Newman, 2018; Ballenger, 2009; Calzada et al., 2015; Davis-Kean et al., 2021; Friedman et al., 2006; Ishimaru and Takahashi, 2017; Yu, 2020). Therefore, it may undermine parents' perceived capabilities to contribute to their children's academic progress by failing to recognize them as sufficiently qualified (Ballenger, 2009; Fang et al., 2017; Sheng, 2012). Moreover, it could negatively affect parents' social identities and self-efficacy, hindering their willingness to actively participate in children's schooling (Ballenger, 2009; Ishimaru and Takahashi, 2017; Yu, 2020). As a whole, this could affect parents' construction of their role in their children's education, which is developed through their relationship with the school and can be either facilitated or hindered depending on whether they are recognized as legitimate actors in transmitting knowledge (Ballenger, 2009; Rane and McBride, 2000).

Exacerbating this, cultural clashes between parents and school, as well as the perception of pressures to assimilate into the host culture, and repeated experiences of discrimination have been identified as important barriers to involvement for parents that belong to minority cultural groups (Onsès et al., 2023; Peček et al., 2008; Sime et al., 2017). In those cases, the educational centers could be perceived as a source of psychological and cultural threats, leading parents to limit their interactions with the school members in order to protect their cultural and personal identities (Antony-Newman, 2018; Marchand et al., 2019).

1.2 Explaining immigrant parents' school involvement: cultural diversity climate and cultural sensitivity

1.2.1 School cultural diversity climate

There have been identified several factors that parents consider crucial for their children's school experiences. Among them are physical and psychological safety, the promotion of positive peer relationships, and support for the family (Ball et al., 2019; Baker et al., 2016; Hoover-Dempsey et al., 2005; Montecinos et al., 2010). The perception of a positive school climate, more specifically, appears particularly significant for parents from socially excluded groups (Baker et al., 2016; Reynolds et al., 2015), for whom school could represent a space of care and protection for their children (Davis-Kean et al., 2021). By establishing strong relationships and regular communication with educational institutions, parents can significantly influence their children's academic outcomes and foster a more supportive and responsive school environment (Berkowitz et al., 2021; Koutsouveli and Geraki, 2022). This is because parental involvement is closely linked to the perceived positive recognition of their cultural identities within school communities among immigrant families

(Hoover-Dempsey and Sandler, 1997; Hoover-Dempsey et al., 2005; Khalfaoui et al., 2020).

As one might expect, promoting a cultural diversity climate is a crucial aspect of the experiences of students, teachers, and families within multicultural schools (Bardach et al., 2024; Schachner et al., 2016; Schachner et al., 2019). Cultural diversity climate is defined as the strategies employed by schools to facilitate the coexistence of diverse cultural groups. These strategies are reflected in practices, norms, and behavioral guidelines that shape intergroup relationships among students from different ethnic backgrounds and between students and teachers (Baysu et al., 2024; Byrd, 2017; Schachner et al., 2019).

Approaches to cultural diversity in schools typically fall into two categories, which often underpin public policies in multicultural societies. The first approach focuses on preventing and reducing discrimination while promoting equity and inclusion for minority group members. The second approach emphasizes adherence to pluralism and the appreciation of cultural diversity as a resource for fostering harmonious coexistence and social cohesion (Chrobot-Mason and Aramovich, 2013; Fine-Davis and Faas, 2014; Schachner et al., 2016; Vandekerckhove and Aarssen, 2020). As such, cultural diversity reflects the extent to which schools implement these two approaches (Fine-Davis and Faas, 2014; Schachner et al., 2016; Schwarzenthal et al., 2020; Vandekerckhove and Aarssen, 2020). Numerous studies indicate that equitable treatment by teachers, along with opportunities for cooperation and shared goals among school community members, significantly contributes to reducing prejudice, discrimination, and intergroup conflict (Beelman and Heinemann, 2014; Cameron and Turner, 2017; Titzmann et al., 2015; Ülger et al., 2018).

On the other hand, promoting pluralism entails integrating respect and positive recognition of students' cultural identities into teaching practices. In educational contexts, teachers tend to develop culturally sensitive pedagogies (Schachner et al., 2016) and create spaces for cultural exchange among families (Reynolds et al., 2015). The perception of equitable treatment, justice, and cultural recognition within the school environment has been linked to reduced discrimination, lower victimization rates, increased school participation, and enhanced wellbeing among minority group students (Özdemir and Stattin, 2013; Sirlopú and Renger, 2020). While scarce, available literature indicates that immigrant parents' perceptions of how well their children's and their own cultural identities are recognized and valued by schools is associated with parental involvement (Calzada et al., 2015; Baker et al., 2016; Khalfaoui et al., 2020; Reynolds et al., 2015; Sohn and Wang, 2006). Consequently, a supportive cultural diversity climate aligned with the type of cultural exchange that immigrant families seek could potentially enhance their engagement in school activities. In contrast, schools that predominantly adopt individualistic, assimilationist, or segregationist approaches may discourage immigrant parents from participating in their children's education (Calzada et al., 2015; Baker et al., 2016; Khalfaoui et al., 2020; Reynolds et al., 2015; Sohn and Wang, 2006).

1.2.2 Cultural sensitivity

Another important aspect to parental involvement is immigrant parents' competencies to communicate in the school context. Usually studied under the name of cultural sensitivity, it is defined as the

affective dimension of intercultural communication (Bennet, 1986; Chen and Starosta, 1998; Chen and Starosta, 2000). This competency involves the application of socio-cognitive skills to enhance awareness through intercultural interactions and the processing and comprehension of culturally relevant information. The development of cultural sensitivity extends beyond recognizing and understanding cultural differences and similarities; it also requires fostering positive attitudes toward individuals from diverse backgrounds, including accepting and respecting their cultural identities, thereby overcoming ethnocentric perspectives (Bhawuk et al., 2008).

These positive attitudes serve as motivators for engaging with outgroup members and enhance individuals' willingness to adapt their behaviors in intercultural contexts (Chen and Starosta, 2000; Chao et al., 2017; Rania et al., 2012; Rodenburg and Boisen, 2013; Ting-Toomey, 2009). Furthermore, individuals who exhibit sensitivity in intercultural communication tend to engage more fully in such interactions and to experience enjoyment when meeting with members of other cultures (Chao et al., 2017; Chen and Starosta, 2000; Mera-Lemp et al., 2024; Zhang and Zhou, 2019). Additionally, it has been observed that these capabilities facilitate positive expectations about future interactions with members of other cultures, thereby increasing satisfaction with intergroup contact (Herrero-Hahn et al., 2019; Lee and Ma, 2019).

While cultural sensitivity can be an important resource for facilitating parental involvement in schools, it has received little attention in this context (Sohn and Wang, 2006). However, existing evidence indicates that, among immigrant students, these competencies are explained by the perception of positive contact norms and cooperation, which improves students' intergroup attitudes, intercultural awareness, and the development of effective behavioral strategies in diversity scenarios (Schachner et al., 2015; Schwarzenthal et al., 2020). As these competencies increase, students' satisfaction with their schooling and their integration within educational contexts improve (Mera-Lemp et al., 2020; Rania et al., 2012). In the same vein, research has reported that higher levels of intercultural sensitivity are associated with greater involvement of university students in both formal and informal academic activities within multicultural contexts (Tamam and Krauss, 2017). Several studies have also suggested that teachers' cultural sensitivity promotes the development of pedagogical practices that include respect for and positive recognition of students' cultural identities (Katitaş et al., 2024; Mera-Lemp et al., 2024; Ulbricht et al., 2022).

1.3 The Chilean case

In Chile, the rapid increase in the immigrant population is leading to significant changes within the education system. As of 2022, foreigners constituted 8.3% of the total population, primarily originating from countries such as Venezuela (32.8%), Peru (15.4%), Colombia (11.7%), and Haiti (11.4%) (Instituto Nacional de Estadísticas, 2022). Consequently, immigrant students constitute 8% of overall national school enrollments, primarily concentrated in public schools (57.2%) and private subsidized institutions (38.1%) (Servicio Jesuita a Migrantes, 2024).

Official data indicate that the living conditions of immigrant families are often precarious. Despite their increased presence in the workforce, immigrants typically earn lower incomes, have lower rates

of community participation, and have limited access to support networks compared to native citizens (Ministerio de Desarrollo Social y Familia, 2024). Immigrant families are highly exposed to discrimination based on their cultural origins and encounter more significant barriers to accessing social services and healthcare than Chileans (Aninat and Vergara, 2020; Cabieses and Oyarte, 2020; Grau et al., 2021). In the same vein, more than 26% of immigrant children and adolescents aged 1–18 live in conditions of multidimensional poverty, a rate that double that of the Chilean population (Servicio Jesuita a Migrantes, 2021).

Immigrant students are also concentrated in schools which are often characterized by high levels of vulnerability, low educational quality, and school climate problems (Eyzaguirre et al., 2019). Additionally, results from PISA test have shown that these students tend to present lower levels of academic achievement than Chileans (Agencia de Calidad en Educación, 2022), which coincides with the international tendency (Karakus et al., 2023). Besides, they exhibit lower attendance rates compared to their native counterparts across all levels of education (García and Friz, 2019).

Although the Chilean education system is implementing changes to address these sociocultural transformations by promoting inclusion and intercultural teaching, research has revealed difficulties in managing social and cultural diversity within schools (González et al., 2023; Ortega et al., 2020). For instance, different studies have shown the existence of intergroup conflicts, stressing the negative effects of discrimination and prejudice on their school experiences (Guthrie et al., 2019; Mera-Lemp and Martínez-Zelaya, 2021; Pavez-Soto et al., 2019; Segovia-Lagos et al., 2023).

Taken together, these antecedents indicate that immigrant families settled in Chile are facing several difficulties in their relationships with schools, which seem to be leading children to an important academic disadvantage. Given the impact of experiences at school and academic achievement on children's positive development as well as in their social and cultural integration in the future, it is important to consider the role of their parents as key actors during their schooling processes (Boonk et al., 2018).

1.3.1 Immigrant parents in the Chilean educational system

While the overall research on immigrant parents' experiences in Chilean schools is limited, past research examining the perspectives of Chilean teachers highlights the negative implications of insufficient training in culturally responsive teaching practices, as well as the perception of cultural threat and biases toward immigrant students and their families (Flanagan-Bórquez et al., 2021; Riedemann et al., 2020). Additionally, some studies have indicated that native teachers often exhibit ambivalence when assessing immigrant parents' abilities to take an active role in their children's education, suggesting that these parents do not sufficiently engage in school activities (Segovia and Rendón, 2020).

On the other hand, research on acculturation preferences indicates that Latino immigrant adults and adolescents strongly desire to maintain their original cultural identities while incorporating elements of Chilean culture. This dual commitment is linked to higher levels of wellbeing and social connectedness with host society members (Mera-Lemp et al., 2021; Mera-Lemp and Martínez-Zelaya, 2021). Nonetheless, despite these parents wanting their children to maintain their cultural identities and learn about Chilean culture, they often promote cultural assimilation

at school to avoid conflict (Oyarzún et al., 2022). Additionally, immigrant parents prefer enrolling their children in schools with a significant immigrant population to minimize their exposure to discrimination from native students (Eberhard and Lauer, 2019). This suggests that parents' participation could be hindered by difficulties in their interactions with teachers and Chilean parents (Joiko and Vásquez, 2016).

1.4 Objectives and hypotheses

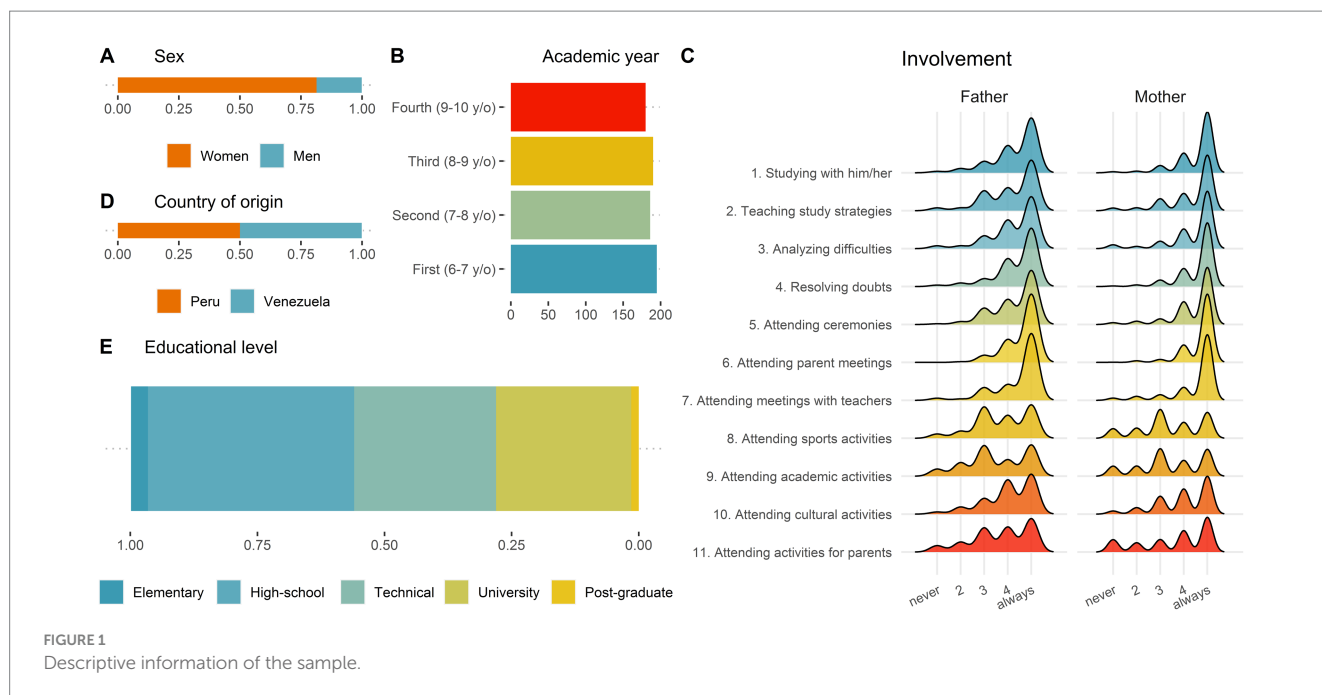
On summary, prior research suggests that the intercultural sensitivity of immigrant parents may be explained by the extent to which they perceive a climate of cultural diversity that facilitates positive intergroup relations at school settings (Sohn and Wang, 2006). Furthermore, feeling capable of communicating and sharing culturally based knowledge within the school environment can enhance their engagement in school activities, thereby supporting the positive development of their children (Swap, 1993). Based on these antecedents, this study aims (1) to study the relationships between cultural diversity climate, cultural sensitivity and school involvement perceived by Latin-American immigrant parents settled in Chile, and (2) to the determinate the possible influence of cultural sensitivity on the relationship between cultural diversity climate and parents' school involvement. As a hypothesis, we expect that: 1. Parental school involvement will be explained by cultural diversity climate; 1.1. Parental school involvement will be explained by cultural sensitivity; 2. Cultural sensitivity will mediate the effects of cultural diversity climate on parental school involvement.

2 Materials and methods

2.1 Participants and procedure

The present study uses a correlational design and a non-probabilistic convenience sample of immigrant parents and tutors of school children. The sample was collected by professional interviewers of immigrant origin who went to the areas surrounding the educational establishments ($k = 171$ schools) in 31 districts of the city of Santiago to invite immigrant school guardians. In turn, study participants could in addition recommend people they knew to participate, and the main inclusion criteria were (a) being an immigrant of Peruvian or Venezuelan origin and (b) being a parent of a student in grades 1–4 in an educational establishment in Santiago.

The final sample consisted in 751 participants (visual descriptions in Figure 1), 18.5% were males and the other 81.4% females, with no differences in the proportion their proportion by country of origin ($\chi^2(1) = 0.456$; $p = 0.500$). They were equally from Peru and Venezuela and their pupils were in first (6–7 years) to fourth grade (9–10 years) of the Chilean educational system. Participants' consent was requested, aiming to safeguard voluntarily participation. The procedures followed in the study were certificated by the Research Ethics Committee of Universidad Alberto Hurtado, considering all the standards of the Helsinki Declaration.



2.2 Variables and instruments

Each participant answered demographic information regarding their gender, age, nationality, educational level, length of stay in Chile, type of school attended by their student and length of time as a parent or guardian. Besides, they were asked to inform their child's gender and academic year. In addition, they answered the following measures:

2.2.1 Cultural diversity climate

We adapted 18 items from the Affirming Climate for Workplace Diversity (Chrobot-Mason and Aramovich, 2013). This scale was originally created to assess immigrants' perceptions of the cultural diversity climate within organizations, and its validation (i.e., construct and criterion) was carried out with a large sample of public servants (Chrobot-Mason and Aramovich, 2013). In this study, it was used to measure parents' perceptions of equitable treatment, equal access to opportunities and identification with the institution, and identity recognition (e.g., "In the school where I am a guardian, immigrants receive fewer opportunities than Chileans (scholarships, social assistance, support for guardians and students, etc.)," "In the school where I am a guardian, both Chileans and immigrants are treated fairly") on a Likert scale from 1 (Very disagree) to 4 (Very agree). In the present study, total reliability was of $\alpha = 0.93$.

2.2.2 Cultural sensitivity

The cultural sensitivity scale (Chen and Starosta, 2000), validated in Chile by Martínez-Zelaya et al. (2020), was applied. It consists of 24 Likert-type items with four answer options (1 = Very disagree, 4 = Very agree) (e.g., "When I speak with people from different cultures, I try to gather as much information as possible," "I enjoy being with people from different cultures"). Previous studies have successfully analyzed its construct and criterion validity (Martínez-Zelaya et al., 2020; Lahoz i Ubach and

Cordeu Cuccia, 2021). In this study, the scale's reliability was $\alpha = 0.91$.

2.2.3 Parental school involvement

Eleven items from the School Involvement Questionnaire of the Metropolitan Survey on Family and Education, Centre for Family Studies and Research (CEIF) of Universidad Finis Terrae, were applied. These items measured the frequency in which parents participate at school, including both academic (e.g., "Meetings with teachers") and extracurricular activities (e.g., "Sports activities organized by the school"), as well as the extent in which they support their children at home (e.g., "To study with this child for tests"). This scale has been used previously in Chilean studies, which have effectively examined its construct and criterion validity (i.e., Gubbins and Otero, 2018; Gubbins and Otero, 2020). In this research, it presented Alpha: Home = 0.90; School = 0.87; Total = 0.88.

Finally, the official number of immigrants in the commune obtained through the National Institute of Statistics (Instituto Nacional de Estadísticas, 2022) was included as collective level data in relation to the communes where participants were surveyed.

2.3 Analyses

First, we performed a series of confirmatory factor analyses to evaluate the psychometric properties of the scales, with their respective reliability tests (i.e., Cronbach's Alpha). For testing the main hypotheses, we conducted multi-level modeling and plotted the main results and finally, we evaluated a mediational model to test our hypotheses. All analyses were conducted in R (R Core Team, 2014) with RStudio (RStudioTeam, 2015). For reliability analysis and the mediational model, we used the packages lavaan (Rosseel, 2012) and semTools (Jorgensen et al., 2022). For correlations, apaTables (Stanley and

Spence, 2018) was used. For multilevel models, lme4 (Bates et al., 2015), and sjPlot (Lüdtke, 2020) for tables and multilevel moderation effects. Finally, we used the package wesanderson for colors (Ram and Wickham, 2023). All the data and the syntax with all the analyses supporting our main analyses are made available in our [Supplementary material](#) section.

3 Results

The correlation matrix (Table 1)¹ revealed a negative association between sex and educational level, suggesting that men have marginally lower education levels than women and school involvement at home, meaning that females tend to be slightly more involved in school-related tasks at home than males. Further significant associations were found between Nationality and Stay in the Country, indicating that Peruvians with pupils at school (compared to Venezuelans) tended to stay more in Chile. Finally, educational level had a strong negative relationship with Nationality, indicating that, for this particular sample, Peruvians had levels of education compared to Venezuelans, which was further corroborated with a Chi-square test ($\chi^2(4) = 134.86$; $p < 0.001$).

Before conducting the main analyses, we evaluated the true nature of the measured constructs (i.e., Culture Diversity Climate and Involvement at School, and the former with Cultural Sensitivity, as seen in Figures 2A,B, respectively). As Figure 2A shows, some lines suggest a positive relationship, while others remain flat or neutral, or even negative. Similarly, in plot B the pattern of lines also shows a diverse set of relationships, with many lines showing minimal slope, although some suggest a slight positive trend between the constructs. As a whole, these visual analyses suggest that the true nature of the variables is nested in schools and therefore, we will test the main hypotheses through multilevel regressions.

As can be seen in the analyses (Table 2), the models explained a substantial percentage of the variance in school involvement, the largest being related to school activities. In detail, among the variables that explained total school involvement is the fact of being female (vs. male), having a higher educational level, having more years as parents and that the pupil is from a younger grade. Finally, the variables that explain the most variance are higher levels of cultural diversity climate, on the one hand, and cultural sensitivity, on the other.

In a detailed analysis, examining activities at home and activities at school, it is observed that both the climate of cultural diversity and cultural sensitivity are the variables that most explain the dependent variables. In addition, it is seen that gender (i.e., being female vs. being male) explains only home activities, and that time as a proxy explains only school activities. On the other hand, educational level significantly explains both variables, while dependence (i.e., public or private and subsidized school) only explains greater involvement in

school activities. In none of the cases is there any effect of nationality, age or length of stay in the country. Additionally, we evaluated whether the effects of the cultural diversity climate and cultural sensitivity were affected by their interaction with participants' nationality, educational level, or the type of school (Figure 3). As can be seen, in all cases, there were positive effects of both cultural diversity climate and cultural sensitivity regardless of the levels of these variables.

Finally, we tested a simple mediation model to explain the scores of the two facets of Involvement in School as it is seen in Figure 3. The overall fit of the path analysis revealed an excellent adjustment ($CFI = 1.000$, $TLI = 1.000$, $RMSEA = 0.000$, 95% CI [0.00, 0.00]) and revealed that there are indirect effects of Cultural Diversity Climate on the two facets of Involvement. In both cases, higher scores in Cultural Diversity Climate, through greater Cultural Sensitivity, explained greater Involvement in home activities ($\beta = 0.06$; $SE = 0.02$, 95% CI [0.03, 0.10]) and in school activities ($\beta = 0.04$; $SE = 0.02$, 95% CI [0.02, 0.09]).

4 Discussion

This study shows that immigrant parents' school involvement is shaped by the interaction of different levels of their experiences, such as home, school, and sociocultural factors, as has been stated by several authors (i.e., Antony-Newman, 2018; Bronfenbrenner and Morris, 1998; Hoover-Dempsey and Sandler, 1997). Particularly, our results support the idea that cultural diversity climate and cultural sensitivity are fundamental aspects of immigrant parents' involvement at Chilean schools. It also shows that institutions that create favorable conditions for intergroup contact through practices of positive recognition of cultural identities, equitable treatment and equal access to opportunities (for both Chilean and immigrant parents), foster immigrant guardians' commitment. Importantly, this includes not only parental participation in school activities but also encourages their engagement in helping children with their learning processes at home (Figure 4).

The results presented here indicate that, when schools positively manage cultural diversity, parents' socio-cognitive skills and attitudes to communicating in intercultural settings are enhanced. In turn, cultural sensitivity promotes greater involvement in their children's education. Higher skills for interacting with native teachers and parents may facilitate intergroup contact and social performance in the case of our participants. Interestingly, our findings show that they also influence the extent to which these parents are involved in their children's school education at home, suggesting that cultural sensitivity could lead to a better attitude toward the culturally based school content that children must learn and study at home. Remarkably, the effects of sociodemographic variables (i.e., gender, age, educational level, length of stay in the country) only had a minor influence on parents' involvement despite being focused on in past research. Together with the fact that the present study's sample was composed of participants of the nationalities representing the two main immigrant communities in Chile, these findings highlight the relevance of cultural diversity climate and cultural sensitivity. Indeed, these variables can be considered assets that could improve immigrant parents' involvement with diverse backgrounds and at different contexts such as public or subsidized schools with varying levels of immigrant population sizes.

¹ We consider it important to mention that, due to the nature of the data in this research, the correlation table should be taken as a guideline and not as a reflection of what actually occurs between the variables.

TABLE 1 Means, standard deviations and correlations among variables.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Sex ¹	–	–												
2. Age	35.82	7.27	–0.10**											
			[–0.17, –0.02]											
3. Nationality ²	–	–	0.02	0.02										
			[–0.05, 0.10]	[–0.05, 0.09]										
4. Ed. Level	2.82	0.91	–0.10**	–0.01	–0.36**									
			[–0.17, –0.03]	[–0.08, 0.06]	[–0.42, –0.30]									
5. Stay	7.45	5.61	–0.06	0.21**	0.64**	–0.25**								
			[–0.13, 0.01]	[0.14, 0.28]	[0.59, 0.68]	[–0.32, –0.18]								
6. Dependency ³	–	–	–0.05	0.09*	0.00	0.11**	0.05							
			[–0.12, 0.02]	[0.02, 0.16]	[–0.07, 0.07]	[0.04, 0.18]	[–0.02, 0.12]							
7. T. Guardian	2.89	1.97	–0.03	0.24**	0.31**	–0.11**	0.48**	0.06						
			[–0.10, 0.04]	[0.18, 0.31]	[0.24, 0.37]	[–0.18, –0.03]	[0.42, 0.53]	[–0.02, 0.13]						
8. Aca. Year	2.47	1.12	–0.03	0.18**	0.07*	0.02	0.11**	–0.01	0.25**					
			[–0.10, 0.04]	[0.11, 0.25]	[0.00, 0.14]	[–0.05, 0.09]	[0.04, 0.18]	[–0.08, 0.06]	[0.18, 0.31]					
9. CSC	3.20	0.69	–0.08*	–0.03	–0.01	–0.02	0.03	0.01	0.13**	0.02				
			[–0.15, –0.01]	[–0.10, 0.05]	[–0.08, 0.06]	[–0.09, 0.06]	[–0.04, 0.10]	[–0.06, 0.08]	[0.06, 0.20]	[–0.06, 0.09]				
10. CS	3.87	0.49	–0.05	0.04	–0.22**	0.10**	–0.11**	0.04	0.02	0.02	0.38**			
			[–0.13, 0.02]	[–0.04, 0.11]	[–0.29, –0.15]	[0.02, 0.17]	[–0.18, –0.04]	[–0.03, 0.11]	[–0.05, 0.09]	[–0.05, 0.09]	[0.32, 0.44]			
11. Involv. H.	4.42	0.81	0.08*	–0.01	–0.07*	0.08*	–0.04	–0.02	0.03	–0.13**	0.18**	0.19**		
			[0.01, 0.15]	[–0.08, 0.06]	[–0.15, –0.00]	[0.00, 0.15]	[–0.11, 0.03]	[–0.09, 0.05]	[–0.04, 0.10]	[–0.20, –0.06]	[0.11, 0.25]	[0.12, 0.26]		
12. Involv. S.	4.02	0.83	–0.02	0.08*	0.04	0.11**	0.08*	0.17**	0.18**	0.00	0.23**	0.19**	0.42**	
			[–0.09, 0.05]	[0.01, 0.15]	[–0.03, 0.11]	[0.04, 0.18]	[0.00, 0.15]	[0.10, 0.24]	[0.11, 0.25]	[–0.07, 0.07]	[0.16, 0.29]	[0.12, 0.25]	[0.36, 0.48]	
13. Involv. T.	4.16	0.70	0.02	0.06	–0.00	0.11**	0.04	0.12**	0.15**	–0.05	0.24**	0.22**	0.73**	0.93**
			[–0.05, 0.09]	[–0.02, 0.13]	[–0.07, 0.07]	[0.04, 0.18]	[–0.03, 0.11]	[0.05, 0.19]	[0.07, 0.21]	[–0.13, 0.02]	[0.18, 0.31]	[0.15, 0.29]	[0.70, 0.77]	[0.91, 0.93]

M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. ¹1 = Men, 2 = Women. ²Nationality is the comparison between immigrants from Venezuela (1) and Peru (2).

³Dependency indicates whether each school was public (i.e., fully maintained by the state; 1) or subsidized (i.e., financed by the state but administrated by private organizations; 2). CDC = Cultural Diversity Climate; CS = Cultural Sensitivity. Involv. H., Involv. S., and Involv. T., indicate Involvement in School with tasks at Home, School and the Total score, respectively. **p* < 0.05. ***p* < 0.01.

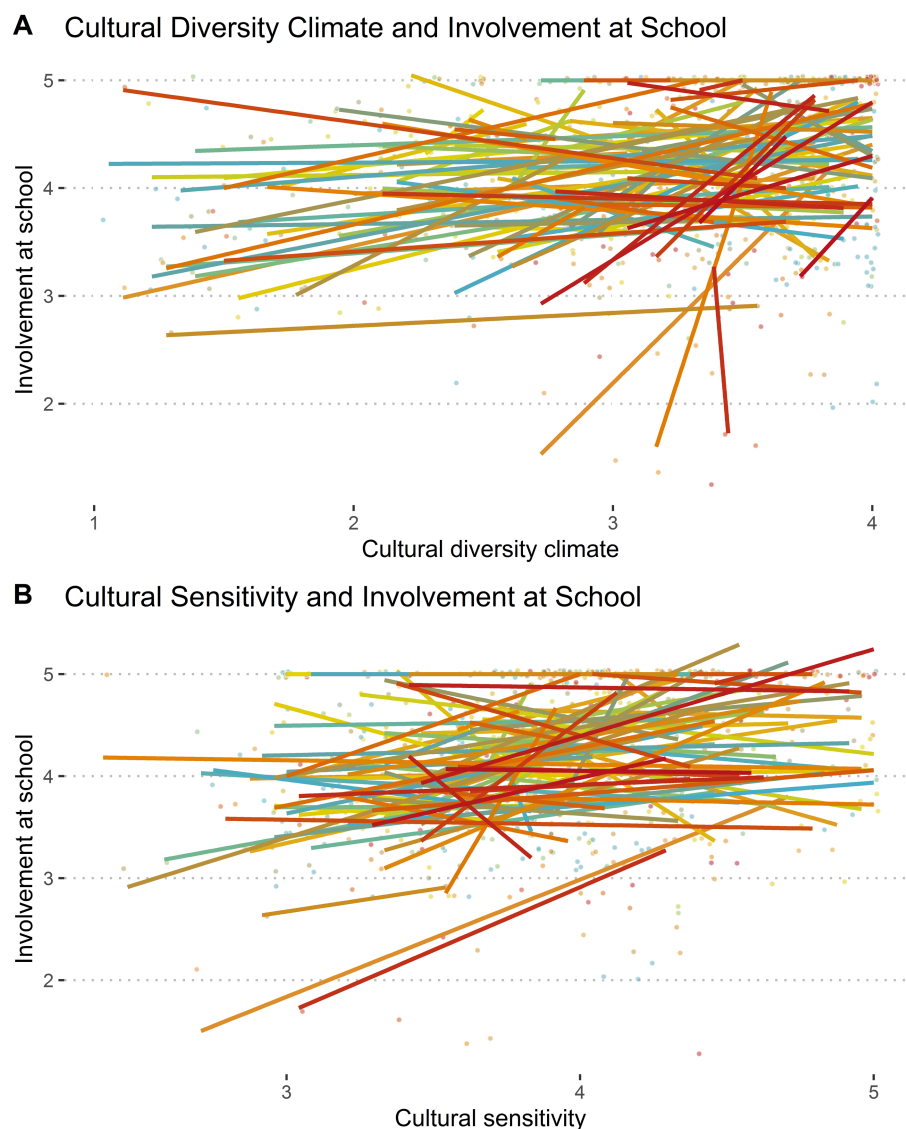


FIGURE 2

Linear relations between the variables. Each line represents a linear regression predicting involvement at school by either cultural diversity climate (A) or cultural sensitivity (B), across 171 schools of Santiago, Chile.

These outcomes are especially relevant because immigrant parents find themselves in a situation of significant disadvantage compared to the majority group. On the one hand, they must overcome several barriers to access basic social welfare conditions. Furthermore, they belong to social categories with low recognition, status and power, exposing them to different forms of discrimination. The fact that cultural diversity climate, as well as cultural sensitivity, tend to have a greater influence on parental involvement than sociodemographic variables, such as educational level, suggests that schools have the potential to become spaces that can legitimize immigrant parents by ensuring equality and justice in their relationships. Certainly, educational institutions cannot modify the structural conditions that constrain these parents' participation in children's schooling. However, by improving parental involvement, schools can promote students' social inclusion by fostering their academic achievement and positive development. When educational centers do not provide the necessary conditions for students to

expand their personal, social, and cultural resources, they reproduce social inequalities, particularly affecting those from minority groups (Ali, 2008; Mzidabi et al., 2024).

In fact, several authors (Bankston, 2004; Martínez-Taboada et al., 2017; Ogbu and Simons, 1998; Olmedo, 2003) have indicated that lack of recognition, pressure to assimilate, and unfair treatment can lead to cultural resistance strategies, resulting in absenteeism, academic failure, and school dropout. These problems are often experienced by immigrant children, who usually are at high risk of poor academic results and frequently live in vulnerable conditions (Alieva et al., 2024; Özdemir and Bayram Özdemir, 2020) and might keep families from minority groups in precarious situations, perpetuating dynamics of exclusion and social marginalization (García, 2011). Strong collaboration and egalitarian relationships between parents and school staff could help to reverse these cycles of inequality (Khalfaoui et al., 2020; Serna et al., 2008).

TABLE 2 Multilevel models predicting involvement at school across 171 schools in Santiago.

Predictors	Total score			Home			School		
	β	95% CI	p	β	95% CI	p	β	95% CI	p
(Intercept)	0.03	−0.07, 0.13	<0.001	−0.02	−0.11, 0.08	<0.001	0.06	−0.05, 0.16	<0.001
Sex ¹	0.09	0.02, 0.15	0.008	0.11	0.05, 0.18	0.001	0.05	−0.01, 0.12	0.094
Age	0.02	−0.04, 0.09	0.483	0.00	−0.07, 0.07	0.995	0.03	−0.03, 0.10	0.331
Nationality ²	0.01	−0.10, 0.12	0.849	−0.05	−0.17, 0.07	0.440	0.04	−0.06, 0.14	0.442
Edu. Level	0.10	0.02, 0.17	0.009	0.08	0.00, 0.15	0.047	0.09	0.02, 0.16	0.014
Stay	0.00	−0.09, 0.10	0.987	−0.01	−0.11, 0.09	0.876	0.00	−0.09, 0.09	0.946
Dependency	0.10	−0.00, 0.20	0.053	−0.04	−0.13, 0.05	0.385	0.13	0.03, 0.23	0.010
Time guardian	0.10	0.02, 0.18	0.011	0.03	−0.06, 0.11	0.539	0.13	0.05, 0.20	0.001
Academic year	−0.07	−0.14, −0.01	0.035	−0.11	−0.18, −0.03	0.004	−0.05	−0.11, 0.02	0.182
CDC	0.18	0.10, 0.25	<0.001	0.13	0.05, 0.21	0.001	0.17	0.09, 0.24	<0.001
CS	0.14	0.07, 0.22	<0.001	0.12	0.04, 0.20	0.003	0.13	0.05, 0.20	0.001
Immigrants ³	−0.03	−0.12, 0.05	0.450	−0.05	−0.15, 0.04	0.262	−0.01	−0.09, 0.08	0.904
Random effects									
σ^2	0.36			0.52			0.47		
τ_{00} School	0.29			0.33			0.34		
τ_{11} School Nationality	0.05			0.16			0.02		
ρ_{01} Centro	−0.89			−0.93			−1.00		
ICC	0.21			0.15			0.22		
N Centro	171			171			171		
Observations	751			751			751		
Marginal R ² /Conditional R ²	0.112/0.296			0.074/0.210			0.114/0.313		

¹1 = Men, 2 = Women. ²Nationality is the comparison between immigrants from Venezuela (1) and Peru (2). ³The variable represents the number of immigrants in the commune within Santiago. CDC = Cultural Diversity Climate; CS = Cultural Sensitivity. Involv. H., Involv. S., and Involv. T., indicate Involvement in School with tasks at Home.

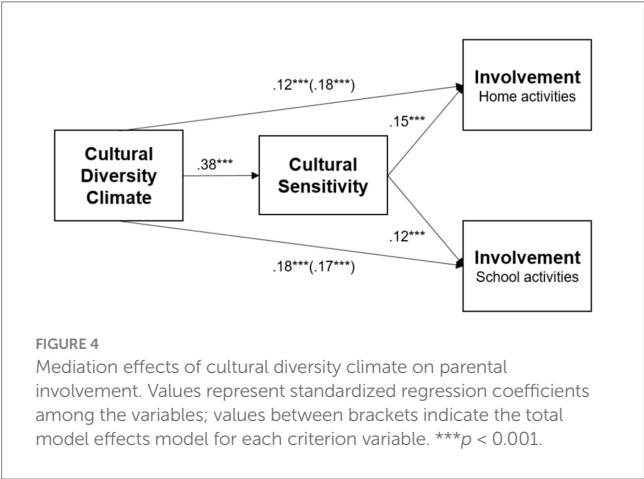
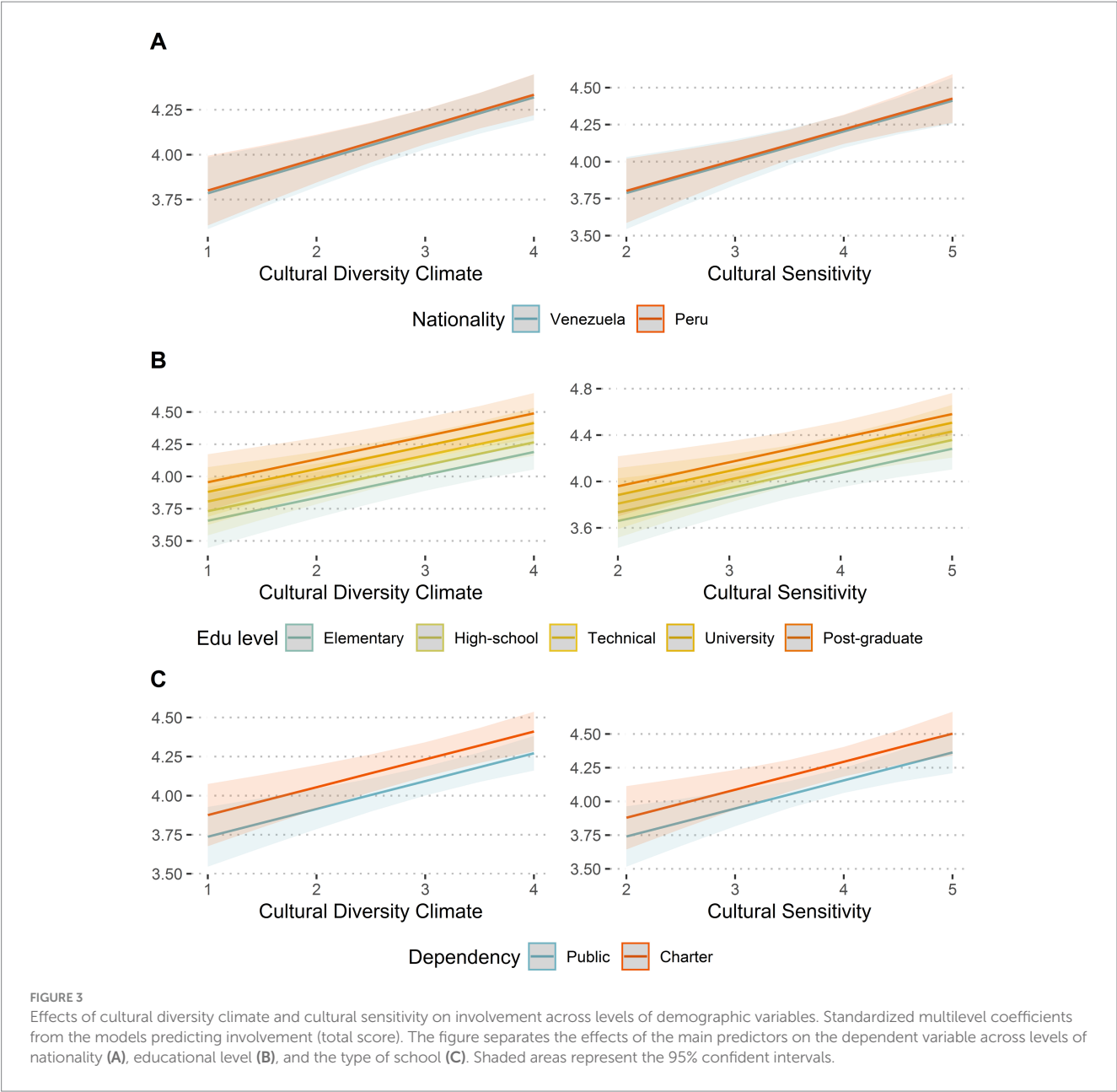
Given the substantial challenges that educational systems encounter because of the multiple needs of their students and families, it seems that improving the cultural diversity climate and enhancing parents’ cultural sensitivity could have high cost–benefit potential. According to our results, future interventions could focus on establishing school policies that guarantee equal treatment and opportunities, and respect for cultural identities. This could also help teachers and administrators improve their attitudes toward multiculturalism and intergroup relationships between students. Besides, intercultural communication competencies training programs for parents at schools could strengthen their participation in children’s education and reinforce their commitment to the institutions. Also, it could facilitate their integration into the host society in different dimensions of their lives.

4.1 Parents’ school involvement, cultural diversity climate and cultural sensitivity perceptions

We have found high levels of cultural diversity climate, intercultural sensitivity, and additionally, involvement in school in the present sample, and several reasons could explain this. First,

heightened levels of intercultural sensitivity align with reports from immigrant secondary education students in Chile (Lahoz i Ubach and Cordeu Cuccia, 2021). Even though they have operationalized cultural competence in a different manner, other local studies with immigrant students (Mera-Lemp et al., 2020), have shown notable capabilities in both understanding information from the local culture and interacting with native peers in school. This has been attributed to the fact that immigrants must constantly confront the task of navigating information from a new culture, as well as communicating with members of the host society, which may facilitate the development of these competencies (Mera-Lemp et al., 2020; Rania et al., 2012).

Second, high levels of school involvement, both in the home context and through direct participation in school activities, may be linked to higher levels of collectivistic cultures; specifically, due to the relevance of societal norms and conformity (see Henrich, 2020). In fact, families from more collectivistic cultures often adopt parenting styles that emphasize the importance of duty fulfillment and obedience, thereby promoting behavioral control (Bornstein, 2017; Bornstein and Cote, 2006; Gallardo, 2019). Furthermore, it has been suggested that immigrant parents from low-income countries are particularly concerned with transmitting to children the values of hard work and discipline and recognizing the role of education in facilitating social mobility (Nesteruk and Marks, 2011).



It is important to note that these results differ from previous studies, which suggested that immigrant parents in Chile perceived tensions in their relationships with the schools (Eberhard and Lauer, 2019; Oyarzún et al., 2022). This could be attributed to the fact that this study focused on parents' perceptions about their own relationships with school agents rather than the practices implemented within the classroom context. Furthermore, methodological differences could explain these discrepancies, such as using quantitative methodology and including a wide diversity of schools. Besides, research on acculturation attitudes within the Chilean population has described a strong inclination toward individualism. This suggests that Chileans often interact with immigrants as individuals with distinct characteristics and personal goals rather than emphasizing group affiliations (Martínez-Zelaya et al., 2020; Mera-Lemp et al., 2021). Such an approach may

contribute to the perception of equitable and fair treatment by teachers and administrative staff.

Finally, recent studies have also reported that even though Chilean teachers have had to face the challenges of teaching immigrant students with little knowledge about intercultural education and scarce resources, it seems that their attitudes toward multiculturalism at school tend to be positive (Mera-Lemp et al., 2024). It is possible that the experience of continuously teaching immigrant students is leading them to new insights, which could boost the development of practices such as the incorporation of content based on the students' cultures of origin and creating strategies to establish trust-based relationships with immigrant families (Mendoza Mardones, 2024).

4.2 The role of sociodemographic variables

Analyzing the relevance of sociodemographic variables, we found that mothers are more prone (compared to fathers) to involve themselves in supporting children in homework and studying at home. In addition, in the present sample, fathers indicated lower levels of cultural diversity at schools than mothers. As is widely recognized, parental roles in children's education are often shaped by parents' expectations and their cultural contexts (Hoover-Dempsey and Sandler, 1997), and these expectations are inherently gendered. Thus, mothers tend to deal with stronger role expectations than fathers regarding active daily involvement, which could lead to a great engagement in the home context (Kim and Hill, 2015; McBride et al., 2009). In the same vein, and while there is a lack of evidence regarding the role of gender in the perception of the school diversity climate, some studies have suggested that women tend to perceive discriminatory attitudes to a lesser extent than men due to cognitive biases that allow them to pay less attention to, or even deny, unfair treatment. This could explain why fathers perceived, to a lesser degree, that the school provides equal treatment and equal access to opportunities compared to women (Kim and Noh, 2014).

Nonetheless, this hypothesis (i.e., differential perception of discriminatory attitudes) is not the only possible explanation since there are no differences between genders in parental involvement at school, and the differences between fathers/mothers in school involvement at home are small in magnitude (see also Figure 1C). While the literature has focused on school involvement among women, the absence of differences by gender in the present study could be seen as a positive outcome, as there is evidence highlighting the importance of fathers' participation for the educational trajectories and wellbeing of their children (Lazović et al., 2022; Rollé et al., 2019). On the other hand, there were no differences between Venezuelan and Peruvian parents regarding their perceptions of cultural diversity climate (see Figure 3A). Nonetheless, Venezuelan participants seem to present higher levels of cultural sensitivity and a stronger involvement at home. This could be because Venezuelan participants presented higher levels of education, and yet, parents' nationality was not related to any of the other variables.

While parents' educational level was not related to the perception of cultural diversity climate, it was positively associated

with cultural sensitivity; at least in intensity (see Figure 3B). Some studies (Sari and Yalçinkaya, 2023) have suggested that academic education contributes to a more positive attitude toward members of other cultures, as well as to an increased ability to communicate in multicultural environments. This also supports the idea that parents with higher cultural capital would be more likely to actively participate in children's education, possibly because their own academic knowledge is aligned with what is promoted by the school (Antony-Newman, 2018; Bourdieu and Passeron, 1990; Epstein, 2018; Hornby and Lafaele, 2011). This underlines the importance of promoting the involvement of those parents for whom a low educational level intersects with being immigrants, placing them in a disadvantaged position (Fang et al., 2017; Sheng, 2012).

Parents' length of stay in Chile was not related to cultural diversity climate perception, probably because the quality of the relationship with the school plays a greater role than the extent of the experience at the receiving country, as has been previously observed in samples of immigrant students (Mera-Lemp et al., 2020). Strikingly, however, it was found that the longer its' duration, the lower their cultural sensitivity. Despite this could be considered counterintuitive, acculturation processes could indeed affect this competence. For example, it is possible that, as immigrants understand and learn the host society's culture, socio-cognitive efforts during intercultural communication decrease. On the contrary, the development of stronger attachments to their own cultural background could decrease their sensitivity (Martínez-Zelaya et al., 2020). Sustained emotional negative experiences through intergroup contact can also diminish immigrants' intercultural competencies (Mera-Lemp et al., 2020).

Conversely, time in the country had a positive relationship with involvement at school activities, suggesting that greater familiarity with the local culture facilitates their participation in school. Furthermore, the longer parents are connected to the school, the greater their perception of the cultural diversity climate, as well as their involvement at home and in the school. Understanding institutions, along with the establishment of relationships with their members over time, would facilitate the perception of belonging, fairness, and recognition of one's own cultural identity at school. It is also possible that school agents tend to establish interpersonal relationships with immigrant parents over time, placing less emphasis on belonging to different intergroup categories. The academic year in which the children were enrolled was only associated with parental home involvement, indicating that the younger the children are, the greater the parental participation in their education at home is (Gubbins and Otero, 2018).

In all, sociodemographic variables cannot fully explain the levels of parental involvement in this large and heterogeneous sample; rather, as we expected, cultural diversity climate and cultural sensitivity are those that more effectively explain it. Additionally, their effects are kept invariant across levels of some of these sociodemographic variables. These results reinforce the relevance of generating positive conditions for intergroup contact at school and the important role of parents' intercultural competencies.

4.3 Limitations, strengths and future research lines

This study has limitations that should be considered. First, using an intentional sample in the framework of a cross-sectional design does not allow us to appreciate the development of the relationship between the studied variables. It could be interesting to study cultural sensitivity's trajectories explaining parental school involvement across time. Additionally, a potential future direction would involve testing this through an experimental design within the context of a training program focused on competencies to assess how it may (or may not) explain parental school involvement.

Second, although our participants come from countries with significant representation in Chile, it would be important to examine whether the variables of this study can also explain parents' involvement in a more heterogeneous sample of immigrant groups. This would allow for testing, among other factors, cultural explanations (e.g., levels of collectivism or relative differences in individualism) within these samples. Third, this research only considers parents' reports without including teachers' and students' points of view. Even though there are scarce antecedents of parental school involvement in Chile, our results seem to be consistent with recent studies that have shown that teachers' attitudes toward multiculturalism at school tend to be positive (Mendoza Mardones, 2024; Mera-Lemp et al., 2024), which could be facilitating parents' experiences at school. Also, some studies conducted with immigrant students in the local context have found high levels of school satisfaction (Mera-Lemp et al., 2020) and positive school climate perceptions (Lahoz i Ubach and Cordeu Cuccia, 2021). However, future studies with immigrant parents should consider the importance of including pupils and school staff to carry out data triangulation.

Notwithstanding, this work contributes to comprehending immigrant parents' school involvement in the context of South-south migration, which has been very scarcely studied. Besides, and despite its relevance, parents' perception of the cultural diversity climate at school and its effects have received little attention, so this study represents a contribution to developing this research line. Finally, it is important to remark that our results suggest intervention perspectives with significant cost-benefit potential for schools. Considering the great impact that the increase of migratory flows is having on the educational systems, this could be an interesting alternative to explore.

5 Conclusion

This study shows two psychological variables can influence the school involvement of immigrant parents in Chile: the school's cultural diversity climate and cultural sensitivity. In those institutions where equal treatment, recognition of different cultural identities, and social inclusion are fostered, environments are created that encourage immigrant parents to become involved not only in school activities at school but also in learning at home. Although involvement also depends—to a lesser extent—on sociodemographic variables (e.g., gender, educational level or academic year), these results highlight the importance of an inclusive school climate that supports intergroup relations and parental participation. Considering the benefits of parental involvement in school on academic success or social-emotional wellbeing, educational public policies could prioritize

interventions that improve the climate of cultural diversity and promote intercultural competencies in both parents and educational staff.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by Comité de Ética Universidad Alberto Hurtado. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

MM-L: Conceptualization, Funding acquisition, Investigation, Methodology, Resources, Supervision, Writing – original draft, Writing – review & editing. JP: Conceptualization, Investigation, Methodology, Supervision, Writing – original draft, Writing – review & editing. FG-S: Project administration, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The handling editor SD declared a past collaboration with the author JP.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2025.1561863/full#supplementary-material>

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The influence of formative assessment on academic performance: exploring the role of teachers' emotional support

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Formative assessment is widely recognised as a vital tool for improving student performance. However, how formative assessment effectively influences academic performance remains unclear. This study explores the mediating role of emotional support of teachers in this association. By reviewing the recent literature, we explore how formative assessment can indirectly influence student performance through the emotional climate created by teachers. The study was analyzed using a structural equation model to explore the impact of formative assessment on the academic performance of 280 middle-school students in the South Chinese region. The results showed a significant positive relationship between formative assessment and teachers' emotional support, as well as a significant positive relationship between teachers' emotional support and academic performance. Furthermore, we also confirmed that teachers' emotional support plays a mediating role in the relationship between formative assessment and students' academic performance. These implications illuminate the importance of integrating emotional support strategies into formative assessment to improve educational outcomes. Several limitations of this study are discussed (e.g., cross-sectional design, cultural constraints, and reliance on self-reported data).

KEYWORDS

formative assessment, academic performance, teachers' emotional support, mediation, structural equation modeling (SEM)

Introduction

Formative assessment is usually continuous and feedback-oriented, and is an integral part of the educational process. Many studies have confirmed its effectiveness in promoting academic performance (Hattie and Timperley, 2007; McCallum and Milner, 2020; Morris et al., 2021); however, some researchers have raised doubts about its effectiveness (e.g., Bennett, 2011; Briggs et al., 2012; Boström and Palm, 2023), indicating that its underlying mechanisms remain unclear. There is still some controversy regarding how formative assessment affects student academic achievement, particularly concerning potential mediating or moderating factors, which require further exploration. The mechanisms through which formative assessment affects student achievement are multifaceted and require further investigation. One potential mediating factor was teachers' emotional support. Teachers' emotional support, including positive interactions, encouragement, and a nurturing classroom environment, has been shown to significantly affect students' engagement, motivation and academic achievement (Jennings and Greenberg, 2009; Reyes et al., 2012; Romano et al., 2021; Yang et al., 2021).

However, empirical research on how formative assessment influences academic performance through teachers' emotional support remains limited.

This study aims to fill this research gap by exploring the interaction between formative assessment and teachers' emotional support and examining their combined effects on academic performance.

Literature review

Formative assessment and academic performance

Formative assessment involves the ongoing evaluation of student learning to provide feedback to guide instruction and improve student performance (Black and Wiliam, 1998). Wiliam (2011) outlined five core strategies for formative assessment including: (1) Ensuring that all participants have an explicit comprehension of the success criteria and learning goals by clarifying the intended learning outcomes. (2) Designing classroom activities, discussions, and tasks that encourage students to demonstrate their learning progress. (3) Offering feedback that drives learning improvement. 4. Fostering peer-assisted learning, utilizing students' collective knowledge as a resource for teaching. 5. Guiding students to own their learning. Research has highlighted its positive effects on achievement. For instance, Xuan et al. (2022) confirmed that commonly formative assessment exerted a positive, although modest impact on reading attainment of students. Similarly, a meta-analysis led by Kingston and Nash (2011) found that formative assessment practices were associated with moderate-to-large increases in student achievement. Andersson and Palm (2016) explored the impact of Swedish fourth-grade mathematics teachers' practices on student achievement after taking part in the professional development program on formative assessment. Their results showed that classes instructed by lecturers who received the intervention performed significantly well in comparison to the control group in the post-test. This indicates that improving teaching practices by integrating formative assessment strategies can effectively enhance student performance. Li (2016) used U.S. data from PISA 2009 and found, through structural equation model analysis, that formative assessment demonstrated both indirect and direct positive correlation with reading performance of students. The indirect relationship is mediated through teacher-student relationships and reading attitudes. Recent research by Lu and Cutumisu (2022) highlights the role of formative assessment in mediating the relationship between attendance and academic performance in a TEL-based course. The findings suggest that online formative assessment, along with online self-regulated learning, enhances performance by fostering engagement, indicating that mandatory attendance alone is insufficient for academic success. McCallum and Milner (2020) explored the effectiveness of formative e-assessments in first-year courses, highlighting positive student perceptions of their role in monitoring progress and enhancing learning. The findings also underscored the value of formative e-assessments in fostering student engagement and enabling early academic intervention. Overall, due to the rapid development of artificial intelligence, the forms of formative assessment seem to be changing.

However, a small number of studies indicate that formative assessment exhibited insignificant impact on academic achievement.

For instance, Yin et al.'s (2008) experimental study showed that formative assessment was not significantly effective in improving students' motivation, conceptual change, or scientific achievement. This outcome may be influenced by factors such as classroom management styles of instructors and the extent to which informal evaluation is utilized. But overall, the effectiveness of formative assessment practices was mentioned quite frequently. This suggests that, while there are conflicting results, general consensus supports the positive impact of formative assessment, and that differences across studies may be attributable to contextual factors or differences in implementation methods. Additionally, some studies may have failed to capture nuances in the implementation of formative assessment, such as the quality of feedback or the timing and frequency of assessment, all of which could affect its effectiveness. Therefore, while some studies show limited or no effects, they do not necessarily undermine the broader evidence supporting the value of formative assessment when applied in the right and appropriate context.

Consequently, the hypothesis H1 is postulated:

H1: Formative assessment is positively associated with academic performance.

Teachers' emotional support and academic performance

Emotional support belongs to social support, and teachers' emotional support is characterized by providing students with love, trust, and compassion (House, 1981). Reportedly, emotional support positively influences students' academic engagement (Shen et al., 2024). Social support theory advocates that emotional support establishes a sense of security (Drageset, 2021), and it can significantly improve students' academic performance by increasing learning motivation and reducing stress by creating a supportive learning environment (Chen and Huang, 2024). Likewise, Self Determination Theory (SDT) suggests that (Ryan and Deci, 2020), if emotional support of teachers meets fundamental psychological needs of students (e.g., relatedness), it can stimulate their intrinsic motivation and promote their academic achievement and learning behaviors. For example, a study by Ruzek et al. (2016) found that tutors' emotional support noticeably impacts motivation and engagement of their students, which are essential for academic achievement. Furthermore, Yang et al. (2021) found that instructors' emotional support can positively affect the mathematics performance of boys and girls in primary and secondary schools. In addition, Kashy-Rosenbaum et al. (2018) also emphasized that the emotional support of class teachers is important for students' academic performance. Research at the forefront of SDT theory has started to consider the integration of digital technology support. Chiu (2021) proposed a digital support design aimed at promoting student engagement in blended learning by satisfying the three needs (autonomy, competence, and relatedness) outlined in self-determination theory. The study found that, compared to teacher support, digital support was more effective in enhancing student engagement, with the relationship between digital support and student engagement varying depending on the types of support provided, learning expertise, and emotional design. A review by Li et al. (2024) pointed out that SDT-based interventions can help teachers design effective teaching strategies to meet the three basic needs of students in chatbot learning environments. By fulfilling

these needs, teachers can motivate students with varying levels of ability, thereby addressing the digital divide caused by chatbots and promoting shifts in student motivation and learning outcomes.

Hypothesis H2 is presented as:

H2: Teachers' emotional support is positively associated with academic performance.

The mediating role of teachers' emotional support

Creating an environment that fosters motivation and emotional support is essential for a child's overall development (García-Peinado, 2023). Attachment theory suggests that secure attachment leads to better emotional regulation and resilience (Bowlby, 1969). García-in their review, García-Rodríguez et al. (2023) explored the connection between parent-child attachment and teacher-student relationships, offering new insights into the application of teacher emotional support and attachment theory in education. The relationship between students and teachers is not only influenced by early parent-child attachment experiences, but also evolves into new attachment patterns through interactions with teachers during the school years. In other words, the formation of teacher-student relationships is not simply a continuation of early attachment, but may involve the development of distinct psychological representations (Schuengel, 2012). Overall, teacher-student attachment is influenced not only by the student's early attachment experiences, but also by the teacher's personal characteristics, which may be related to students' academic performance, engagement, and learning processes (García-Rodríguez et al., 2023). Teachers, as highly influential individuals, often possess high emotional intelligence, enabling them to effectively use emotions to influence others (e.g., caring for students and respecting students) (Tripon, 2023). When teachers provide emotional support, they help students feel valued and understood, building secure relationships that increase students' motivation to engage with formative feedback. Formative assessment can provide teachers with opportunities to demonstrate emotional support by providing constructive feedback and recognising students' efforts. Supportive feedback augments emotional and academic resilience of students (Ruzek et al., 2016). Meanwhile, students are more inclined to involve in the feedback provided during formative assessment when they perceive their class teachers as emotionally supportive, leading to improved academic outcomes (Gikandi et al., 2011).

Hence, H3 and H4 are hypothesized that:

H3: Formative assessment has a significant positive association with teachers' emotional support.

H4: Teachers' emotional support mediates the relationship between formative assessment and academic performance.

Methods

Participants and procedure

This study employed a cross-sectional survey design using a convenience sampling method to investigate the research questions.

The participants were selected based on availability and willingness to participate. Data was collected on-site through paper-based questionnaires distributed to students at the end of the semester. The surveys were conducted in classrooms during a scheduled class period, ensuring that participation did not interfere with students' regular academic activities.

All participants voluntarily took part in the study, with no incentives offered for participation. Participation was entirely anonymous, and respondents were assured that their responses would be treated confidentially. Ethical considerations were taken into account, and informed consent was obtained from all participants and their parents before data collection. This study included 302 eighth-grade middle-school students from South China. After eliminating invalid questionnaires, 280 valid responses were obtained. The elimination criteria were: (1) more than 50% of the answers were missing and (2) all answers were consistent. The respondents' ages ranged from 14 to 18 years ($M = 16.15$, $SD = 0.29$); 127 were female (45.36%; $M = 16.13$, $SD = 0.49$), and 153 were male (54.64%; $M = 16.16$, $SD = 0.48$). The overall missing data value was 0.52%, and since the data did not meet the assumption of multivariate normal distribution, we used the MICE package in R to perform multivariate imputation for the missing data (R Core Team, 2019).

Instruments

Formative assessment practice

This study adopts the validated Teacher Formative Assessment Practices Scale developed by Yan and Pastore (2022) to measure the formative assessment practice. The scale consists of 10 items in total, including two factors: 'teacher-directed formative assessment (TdFA)' (e.g., "I clarify what is valued for each assessment task") and 'student-directed formative assessment (SdFA)' (e.g., 'I ask students to provide feedback to help peers improve'). TdFA is used to measure teacher-guided formative assessment practices, while SdFA is used to measure student-guided formative assessment practices. The scale is ranked on a 6-point scale, ranging from 6 (very frequently) to 1 (never). Since this study focuses on students' perceptions rather than teachers' self-reported practices, the scale was adapted by modifying the subject of each item to 'My teacher' (e.g., 'My teacher clarifies what is valued for each assessment task'). This adaptation ensures that the scale measures students' perspectives on how teachers implement formative assessment strategies rather than teachers' self-evaluations. Higher scores on this scale indicate that students perceive their teachers as using formative assessment practices more frequently.

In order to make simpler the model and gauge the main effects of the constructs, a 2nd-order CFA was conducted by merging the 2 sub-factors: TdFA (6 items, Cronbach $\alpha = 0.70$) and SdFA (4 items, Cronbach $\alpha = 0.75$).

Perceived teacher emotional support

The emotional support subscale of the Teacher Support Scale, developed by Wu et al. (2024), was employed to measure students' perceived teacher support of students. This subscale comprised 6 items (such as, 'My teachers encourage me to study hard,' Cronbach

$\alpha = 0.933$). Higher scores on this scale suggest that students perceive greater emotional support from their teachers.

Academic performance

Physics final exam scores of students were selected as an academic performance indicator. At the end of each school year, an exam with unified content and scoring standards is organized. The final exam serves as a standardized assessment tool, ensuring consistency in content, scoring criteria, and examination format across all schools. Compared to assignments, classroom quizzes, or mid-term exams conducted during the semester, it provides a more objective and comprehensive evaluation of students' overall mastery of the course. Moreover, the final exam covers the entire semester's curriculum, allowing for an assessment of students' holistic knowledge acquisition. In contrast, individual tests or assignments conducted during the semester may only evaluate specific topics, making them less effective in reflecting students' overall academic performance. In addition, semester-based coursework grades may be influenced by teachers' subjective evaluations, potentially introducing bias. A standardized final exam reduces such biases, ensuring that the assessment of students' academic performance remains more objective and comparable across different schools. In the data analysis process, the physics scores of 8th-grade students from various schools were included. We use standardized test scores to evaluate students' physics academic performance.

Data analysis

SPSS software was used to calculate descriptive statistics, Cronbach's α , Ordinal α , and correlation coefficients. CFA and SEM analyses were undertaken using R (R Core Team, 2019). The measurement and hypothesized models were then tested. As the data did not satisfy normal distribution, a robust maximum likelihood method was used. Although MLR is not specifically designed for ordinal variables and does not directly rely on polychoric correlation matrices for estimation, previous studies have suggested that it is appropriate to use MLR for factor analysis or SEM when the number of response categories per item is sufficiently large (e.g., five or more) (Raykov, 2012). This is because, when the response categories are numerous, treating these ordinal variables as continuous does not significantly increase the variability of parameter estimates, making this approach acceptable (Johnson and Creech, 1983). For the fit data index, we used the criteria of RMSEA and SRMR values lower than 0.08, and CFI and TLI values higher than 0.90 (McDonald and Ho,

2002). The indirect effect was estimated using a model with 5,000 resamples and percentile bootstrap confidence intervals. When the 95% confidence interval of the estimate did not have 0, the indirect effect was assumed statistically significant (Hayes, 2017).

Results

Preliminary analysis

Table 1 presents Cronbach's α , Ordinal α and Spearman's correlations for each variable. A significant positive association was found between formative assessment practices and teachers' perceived emotional support ($r = 0.55$; $r = 0.38$). Moreover, a significant positive association was documented between perceived emotional support from teachers and academic performance ($r = 0.29$). In the same vein, a significant positive association was established between formative assessment practice and academic performance ($r = 0.20$; $r = 0.16$).

To enhance the model fit in the CFA, the principle for deleting items is based on the theory of the scale as well as the opinions of the teachers. At the same time, following the criteria of Floyd and Widaman (1995), items with factor loadings below 0.4 are deleted. In this study, after deleting items #03 (My teacher uses various assessment activities in the classroom to check our mastery of course content.), #06 (My teacher provides suggestions for us to improve our performance.) and #07 (My teacher asks us to evaluate our peers' work.), the SEM of the formative assessment practice scale obtained an acceptable model fit: $S-B\chi^2/df = 1.876$, CFI = 0.987, TLI = 0.031, SRMR = 0.075, RMSEA = 0.071. All factor loadings are greater than 0.7. The average variance extracted (AVEs) of TdFA and SdFA are 0.77 and 0.71, respectively, both greater than 0.5 (Hair et al., 2017). The composite reliability (CRs) are 0.93 and 0.88, respectively, both greater than 0.7 (Hair et al., 2017). Similarly, to improve the CFA model fit, we deleted item #03 (My teacher encourages me to study hard.) according to the standard. As a result, the teachers' emotional support scale showed a satisfactory model fit: $S-B\chi^2/df = 1.447$, CFI = 0.995, TLI = 0.991, SRMR = 0.013, RMSEA = 0.067. The hypothesized model (Figure 1) showed a good fit with the empirical data: $S-B\chi^2/df = 1.078$, CFI = 0.999, TLI = 0.996, RMSEA = 0.016, and SRMR = 0.026.

Mediation analysis

The results confirmed the following points (Figure 2): (1) Perceived teacher emotional support was positively associated with academic performance ($\beta = 0.247$, $p < 0.001$), which supports H2; (2)

TABLE 1 Descriptive statistics and correlations.

	Cronbach's α	Ordinal α	AP	TdFA	SdFA	PTES
AP	-	-	-			
TdFA	0.929	0.947	0.20***	-		
SdFA	0.869	0.900	0.16**	0.60***	-	
PTES	0.950	0.969	0.29***	0.55***	0.38***	-

Academic Performance: AP, Teacher-directed Formative Assessment TdFA, Student directed Formative Assessment: SdFA, Perceived Teacher Emotional Support: PTES. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

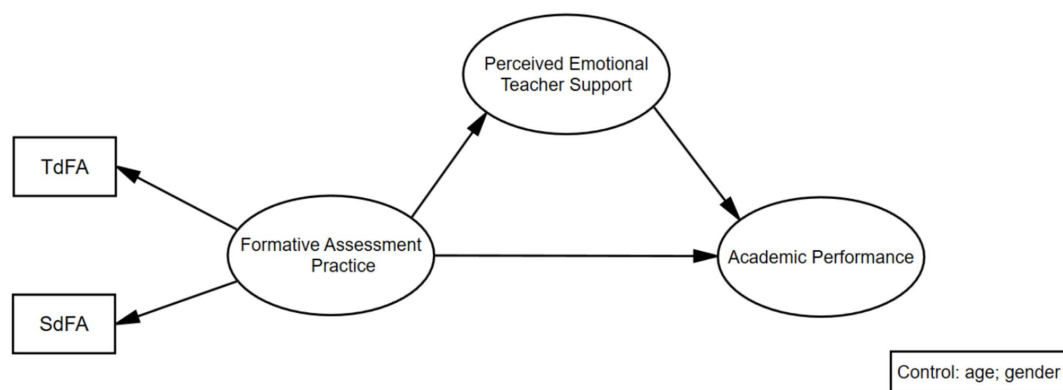


FIGURE 1
Hypothesis model.

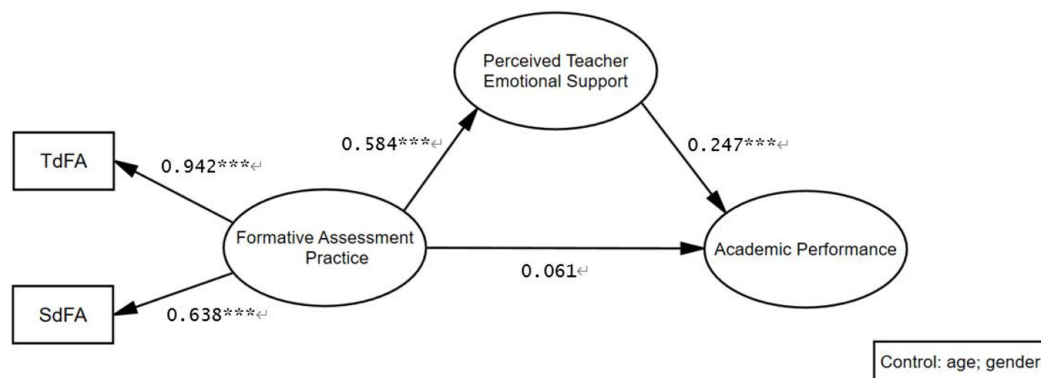


FIGURE 2
Model with standardized coefficients. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Formative assessment practices positively linked with perceived emotional support ($\beta = 0.584$, $p < 0.001$), which supports H3; (3) Formative assessment practices had no direct association with academic performance ($\beta = 0.061$, $p > 0.5$), which do not support H1. Lastly, a bias-corrected bootstrap sampling was utilized to ascertain whether the aforementioned mediation effect was statistically significant. Mediation analysis showed that teachers' emotional support significantly mediated the association between formative assessment practices and academic performance. The indirect effect of teacher emotional support was significant (standardized indirect effect = 0.144, 95% CI [1.719, 6.359]), which supports H4. This indicates that the influence of formative assessment practices on grades can be explained by an increase in teachers' emotional support.

Discussion

In our first research hypothesis, we hypothesized that formative assessment practices would predict academic performance. However, consistent with the study by Yin et al. (2008), our results also showed that formative assessment practices did not significantly predict academic achievement. Although the effectiveness of formative assessment is frequently discussed (Bennett, 2011; Black and Wiliam,

1998; Dunn and Mulvenon, 2009), this is not always the case. One possible explanation is that students may not be in a supportive learning environment, which may affect their acceptance and utilization of formative assessment feedback. According to SDT (Ryan and Deci, 2020), when teachers provide positive emotional support, students are more likely to feel a sense of belonging, which may help them be more receptive to feedback and take proactive actions to improve their learning. A learning environment lacking emotional support may lead students to react negatively to feedback or even avoid it, thereby diminishing the effectiveness of formative assessment. The quality of the teacher-student relationship plays an imperative role in the effectiveness of formative assessment. Specifically, positive teacher-student affiliations, characterized by trust, respect, and emotional support, produce an atmosphere in which students are encouraged to take risks and make mistakes. When teachers make moderate efforts to express emotional support for students, students may be encouraged to establish positive interactions with teachers (Shen et al., 2024). When students perceive that their teachers support them, they are more likely to respond positively to formative assessment, thereby improving their academic performance. In classrooms with greater levels of teacher support, students report greater peer acceptance and classroom engagement compared to those in classrooms with less support (Hughes et al., 2005).

To further enhance the robustness of the research conclusions, future studies should explore potential confounding variables, such as students' socioeconomic status (SES), previous academic achievement, personality traits, and classroom environment. These factors may be closely related to the effectiveness of emotional support and may influence students' responses to formative assessment. For example, [Sortkær \(2019\)](#) found that high-SES students are more likely to view teacher feedback as an equal dialogue compared to low-SES students, which may also affect their perception of teacher emotional support. Additionally, students' academic background, personality traits, or psychological state may moderate their acceptance of teacher support and how they use feedback. By controlling for or considering these factors, future research can provide a more comprehensive understanding of the complex relationship between emotional support and formative assessment, offering more precise guidance for optimizing educational practices.

Implications for practice

This research adds to the understanding of how formative assessment can be optimized by integrating emotional support strategies. This has far-reaching implications for educational practice. These findings highlight the critical role teachers' emotional support plays in improving the formative assessment's effectiveness of student performance. This relationship emphasizes the holistic approach to education that integrates both cognitive and emotional dimensions. By focusing on the interaction between formative assessment and emotional support, we can develop more comprehensive strategies that not only improve academic achievement but also foster supportive learning environments.

Teachers should not only be trained in effective formative assessment techniques but also provide emotional support to students. Emotional support strategies can be incorporated into formative assessment practices using various methods. For example, teachers can use positive reinforcement to recognize students' efforts and progress, thereby improving their self-esteem and motivation. In addition, creating potential prospects for students to reflect on their learning and express their emotions about their progress can help teachers provide targeted emotional support. In addition, peer learning can also be guided by teachers. Collaborative knowledge creation is an effective way for students to learn ([Malan, 2020](#)). Peer learning promotes cooperation through group work and peer review, fostering emotional investment in the process ([Steenkamp and Brink, 2024](#)). This dual approach helps create a supportive and conducive learning environment, ultimately improving student achievement.

Limitation

Various limitations are also associated with this research. First, as a cross-sectional analysis, this study cannot predict causal associations between the variables. However, the findings from this study provide valuable insights for the design of future longitudinal and intervention studies. Future research could consider using longitudinal designs to better explore causal relationships or conduct intervention studies to assess the impact of specific factors. Second, the participants in this study are all Chinese. Most classrooms in contemporary East Asia are teacher-centred ([Jiang et al., 2021](#)), and a good teacher is often seen as someone who can strictly control the classroom process ([Zhu et al.,](#)

[2010](#)). In contrast, when Western students perceive their teachers as stricter, their motivation and self-efficacy tend to decrease ([Jiang et al., 2021](#)). This difference may affect the cross-cultural applicability of the findings. Due to cultural differences, the effectiveness of the findings may need to be further explored in other countries. Additionally, the sample should be expanded to include greater diversity and representativeness, such as students from different grades (e.g., elementary and high school) and regions (e.g., northern and western China), to enhance the generalizability of the findings. Third, due to sampling limitations, the age range of the participants is restricted. A study involving a broader age range could increase the generalizability of the findings. Fourth, all the employed scales are self-report estimates, which may introduce common method bias. Future research could address this by incorporating multiple data sources, such as teacher evaluations, peer assessments, or classroom observations, to provide a more comprehensive measure of academic performance and emotional support. Response bias, as participants might answer in socially desirable ways or misinterpret questions. Lastly, academic performance was measured solely through physics exam scores, which may not capture a full range of learning outcomes. Future research should include multi-subject or competency-based metrics, such as problem-solving skills, to provide a more holistic assessment of student development.

Conclusion

Formative assessment acts as a powerful instrument to improve student achievement. Nevertheless, its impact was greatly enhanced when combined with the teachers' emotional support. This article highlights the value of a holistic method of education that simultaneously considers both cognitive and affective characteristics. Future research should explore this relationship and develop strategies to implement these findings in classroom settings.

Data availability statement

The datasets presented in this article are not readily available because they are owned by the collaborating school, which has imposed confidentiality restrictions to protect the privacy of participating students. Requests to access the datasets should be directed to corresponding author, via email: s1143409@s.edu.hk.

Ethics statement

The studies involving humans were approved by Human Research Ethics Committee, The Education University of Hong Kong. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

JW: Conceptualization, Investigation, Writing – original draft, Writing – review & editing, Data curation, Formal analysis, Methodology, Project administration, Resources, Software,

Supervision, Validation, Visualization. XY: Conceptualization, Investigation, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Generative AI statement

The author(s) declare that Gen AI was used in the creation of this manuscript. We used ChatGPT to improve the grammar and language of our manuscript.

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How do different perceived school goal structures affect Chinese kindergarten teachers' professional identity? The role of basic psychological needs satisfaction and growth mindset

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Introduction: Due to the unique challenges and high-intensity emotional labor in their work, kindergarten teachers' high levels of job burnout and turnover rate have become a widely recognized social issue. To address this situation, exploring the key factors that enhance kindergarten teachers' professional identity is of paramount importance. Professional identity development is influenced not only by the cultural contexts and workplace environment but also by individual teacher characteristics. However, existing research on how environmental and psychological factors interact to influence the professional identity of kindergarten teachers is scarce.

Methods: This study examined the effects of perceived school goal structure on kindergarten teachers' professional identity and explored the mediating role of basic psychological needs satisfaction (BPNS) and the moderating role of growth mindsets. A questionnaire survey was conducted with 1,475 kindergarten teachers from China, selected using random sampling.

Results: The results demonstrated that school learning and performance goal structures indirectly affected teachers' professional identity through the mediating role of BPNS; however, only the school learning goal structure directly affected professional identity. Additionally, growth mindsets only moderated the relationship between school performance goal structure and BPNS. Regardless of the school performance goal structure, teachers with strong growth mindsets reported higher levels of BPNS than those with weak growth mindsets.

Discussion: This study provides a solid theoretical foundation and practical guidance for improving teachers' professional identity within the unique sociocultural context of China.

KEYWORDS

perceived school goal structure, professional identity, basic psychological needs satisfaction, growth mindset, kindergarten teacher

1 Introduction

Teachers exert a profound influence on societal progress. To ensure the wellbeing of both individuals and society as a whole, it is imperative to recognize the significance of teachers and support their professional development (Wu et al., 2024). Teachers' professional identity has long been regarded as the psychological foundation of their professional development (Hanna et al., 2020). Professional identity is defined as an individual's recognition and understanding of the beliefs, values, attitudes, and roles associated with their professional group (Abreu, 2006), involving an individual's cognitive understanding of their professional role, emotional connection, and behavioral manifestations (Zhang et al., 2016). Teachers with a strong professional identity often exhibit a high degree of intrinsic motivation, viewing teaching as a lasting and passionate pursuit rather than merely a means of livelihood (Wu et al., 2024).

Teachers with high professional identity experience high wellbeing (Hui et al., 2024) and job satisfaction (Wu et al., 2024). Conversely, low professional identity leads to a high probability of teachers leaving their jobs (Wang et al., 2024), which, in turn, affects teaching quality (Li, 2021). Kindergarten teachers are the first resource for the high-quality development of preschool education. As high-intensity emotional laborers (Yuan et al., 2025), kindergarten teachers are often prone to emotional exhaustion, job burnout, and even high turnover intentions (Wang et al., 2024). Professional identity can encourage teachers to grow by allowing them to actively perceive and evaluate career-related things (Li, 2014), and it is a particularly crucial aspect in improving emotional fatigue and high turnover rates among early childhood educators. Therefore, exploring the determinants affecting the professional identity of kindergarten teachers is critical for enhancing their psychological wellbeing and improving the quality of education.

The development of professional identity is influenced by cultural context and work environment as well as individual teacher characteristics. However, existing research on how environmental and psychological factors interact to shape the professional identity of kindergarten teachers is scant. Teachers are renowned for their intrinsic motivation and dedication to their profession (Wu et al., 2024); hence, we drew on two complementary motivational theories (Boncquet et al., 2024), namely, Dweck's social-cognitive framework (Dweck and Leggett, 1988) and the self-determination theory (Deci and Ryan, 1985). We examined the relationship between different school goal structures and teacher professional identity and tested the role of basic psychological need satisfaction (BPNS) and growth mindset in this relationship. By jointly examining the two theories, we aimed to uncover the influencing mechanism of teacher professional identity from two different motivation levels.

1.1 Perceived school goal structure and professional identity

Teachers' professional identity is a socialization result of individual cognition (Le Maistre and Paré, 2010) influenced by environmental and sociocultural factors (Gibbons, 2020). Teachers in different cultural contexts and school environments may experience varying levels of professional identity. Perceived school goal structure is the application of achievement goal orientation in understanding school goal orientation. It refers to teachers' interpretations and

internalization of the goals and values promoted by their educational institutions, and can be divided into school learning and performance goal structures (Zhang, 2010). School learning goal structure emphasize acquiring knowledge and skills through persistence, personal learning, and mastering new tasks and view mistakes as part of the learning process. By contrast, school performance goal structure focus on performing well, achieving success through competition, and outperforming others (Skaalvik and Skaalvik, 2011).

According to Dweck's social-cognitive framework (Dweck and Leggett, 1988), achievement goals direct individuals' attentional focus and influence their evaluation of events, fostering distinct achievement-related emotions. Similarly, perceived school goal structures can promote the development of different achievement emotions in individuals. When schools encourage teachers to engage in professional development and self-improvement, they are more likely to be motivated by intrinsic factors (i.e., their interest in and satisfaction with the teaching profession), strengthening their professional identity (Xie et al., 2018). Conversely, school performance goal structure emphasizing achievement and competition may lead teachers to focus on external rewards and avoid failure. Although this type of goal structure may improve short-term performance, it can also suppress teachers' autonomy and intrinsic motivation (Luo et al., 2020), thus harming their professional identity (Xie et al., 2018).

Several studies have indirectly highlighted the importance of school goal structures in influencing teachers' professional identity. For instance, Skaalvik and Skaalvik (2023) showed that both types of perceived school goal structures can directly influence teachers' self-efficacy, and perceived performance goal structure negatively impact teachers' engagement. Sun et al. (2025) analyzed three types of teacher burnout patterns. They found that teachers with a performance goal structure are more likely to belong to the achievement loss and emotional exhaustion groups, while teachers with a mastery class goal structure are less likely to belong to these groups. This result suggests that the goal structure type perceived by teachers can significantly affect their teaching behaviors and emotions. However, how different perceived school goal structures influence kindergarten teachers' professional identity within the unique sociocultural context of China is not well understood.

1.2 Mediating role of basic psychological needs satisfaction

Self-determination theory states that BPNS is the basis for an individual's intrinsic motivation (Deci and Ryan, 1985). Individuals show high intrinsic motivation, positive mental health, and strong behavioral adaptability only when the external environment satisfies their basic psychological needs for autonomy, belonging, and competence. In other words, BPNS may be a key intrinsic mechanism in connecting perceived school goal structure and kindergarten teachers' professional identity.

Environmental factors can either facilitate or impede a teacher's BPNS (Cai and Tang, 2022). The school goal structure is a crucial environmental factor influencing teachers' BPNS. Schools that adopt a learning goal structure encourage teachers and students to focus on mastering the teaching activities, which are controllable, valuable, and consistent with the teachers' educational philosophies. This focus promotes positive experiences for teachers during the teaching process (Luo et al., 2020). In such an environment, teachers can experience a

degree of autonomy and agency and make decisions that align with their values and beliefs, satisfying their basic psychological needs (Ryan and Deci, 2020). In contrast, school performance goal structure places greater emphasis on external competition and comparison rather than on individual growth, which can undermine teachers' BPNS, such as autonomy and belonging (Ketonen and Nieminen, 2025; Nerstad et al., 2020; Schwarz-Franco and Hadar, 2024). Moreover, BPNS affects teachers' professional identity. When teachers' basic psychological needs are met, they are more likely to perceive their professional abilities as being recognized (Xu et al., 2023), thereby developing a healthy sense of self and a stronger professional identity (Weiß et al., 2023). A previous study reported that pre-service teachers who felt strong autonomy support, a high sense of competence, and positive associations with others had strong professional identity (Wong and Liu, 2024).

Some studies have indirectly demonstrated the role of BPNS. For instance, Liu et al. (2024) found that BPNS can mediate the impact of parent-initiated support on career calling among Chinese kindergarten teachers. Wu et al. (2023) found that BPNS and autonomous motivation acted as a mediator between school principals' need-supporting styles and teachers' approaches to job crafting. Similarly, Lee et al. (2020) showed that BPNS significantly mediated perceived principal's learning support and teachers' change-oriented work behaviors. These studies suggest that BPNS can mediate the relationship between the supportive styles of the work environment and teachers' positive teaching styles. However, research exploring how BPNS mediates the link between kindergarten teachers' perceived school goal structure and professional identity is limited.

1.3 Growth mindset as a moderator

Mindsets influence the cognitive processing of information, leading individuals to perceive things differently (Chen and Usher, 2013). Therefore, individuals with different mindsets may experience varying degrees of BPNS when facing the same school goal structure. Dweck's social-cognitive framework distinguishes between fixed and growth mindsets (Dweck and Leggett, 1988). A growth mindset is a positive way of considering the malleability of personal qualities (Dweck and Leggett, 1988). Unlike a fixed mindset that perceives intelligence and ability as unchangeable, a growth mindset believes these qualities can be enhanced or developed through continuous learning and effort (Dweck and Leggett, 1988). Similar to the impact of a school learning goal structure, when adopting a growth mindset, teachers are more likely to recognize the value of their own and their students' progress (Bardach et al., 2024). This phenomenon induces a positive motivational pattern among teachers (Dweck and Leggett, 1988), as it directs them toward learning and improvement and positively influences their self-efficacy (Bardach et al., 2024), life satisfaction (Lee et al., 2023), and wellbeing (Nalipay et al., 2022).

According to the job demands-resources model (Bakker and Demerouti, 2007), work imposes various demands on individuals, including physical, psychological, social, and organizational aspects. These demands can lead to fatigue and tension; however, job resources help individuals cope effectively, promoting engagement and wellbeing. A growth mindset is a meaningful psychological resource that helps teachers cope with job demands and improves their wellbeing (Zilka et al., 2023). Therefore, BPNS, a factor of wellbeing (Keller et al., 2024), may be positively influenced by growth mindsets in the process of teachers

handling job demands, such as the requirements of school goal structure. In other words, growth mindsets may interact with perceived school goal structure to positively affect BPNS among kindergarten teachers. Teachers with growth mindsets may adapt to perceived school goal structure, adjust their teaching strategies and methods, and perceive the requirements and challenges as opportunities for growth and progress rather than stresses and burdens. These teachers continuously challenge and surpass themselves in achieving school goals, attaining a high sense of achievement and satisfaction (Lee et al., 2023).

Although previous studies have not examined growth mindsets as a moderating variable in the analysis of BPNS among kindergarten teachers, some empirical studies have provided indirect support. For instance, Jiang et al. (2024) found that growth mindsets positively moderated the positive impact of two external environmental aspects— institutional integrity and perceived teacher support— on the thriving of students in private higher education institutions. Brandisauskiene et al. (2021) revealed that students' growth mindsets moderated the positive connection between teacher support and student accomplishment. This positive connection was significant only among students with strong growth mindsets. Moreover, a study demonstrated that perceived school climate interacted with growth mindsets to jointly enhance teachers' work engagement in China (Zhang and He, 2024). These studies indicate that growth mindsets play a significant role in strengthening the positive impact of school environmental factors on individual development.

1.4 The present study

To fill the gaps in the existing literature, this study examined the effects of perceived school goal structures on professional identity among Chinese kindergarten teachers. It explored the mediating role of BPNS and the moderating role of growth mindsets in this relationship (Figure 1). Based on previous research findings, we proposed the following hypotheses:

H1: School learning goal structure is positively associated with kindergarten teachers' professional identity, whereas school performance goal structure is negatively associated with their professional identity.

H2: BPNS significantly mediates the relationship between perceived school goal structures and professional identity.

H3: Growth mindsets significantly moderate the relationship between perceived school goal structure and BPNS.

2 Methods

2.1 Participants

This study randomly selected multiple kindergartens across the country willing to participate in the research and invited all teachers from these kindergartens to complete a questionnaire survey. A total of 1,627 teachers participated in the survey. Subsequently, 152 questionnaires were excluded due to incomplete answers, completion times of less than 180 s and abnormal age filling. Finally, 1,475

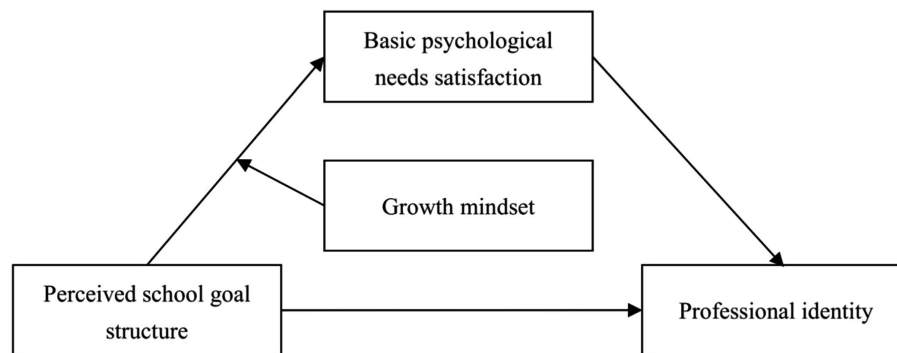


FIGURE 1
Hypothesis model.

kindergarten teachers (1,432 women and 43 men) were included in the analysis. The participants' ages ranged from 20 to 60 years, with an average of 34.01 years ($SD = 8.41$ years). Their work experience ranged from 0 to 43 years ($M = 10.92$ years, $SD = 9.33$ years).

2.2 Procedure

For convenience, data were collected using the Wenjuanxing platform¹. Ethical clearance for this research was obtained from the Academic Ethics Review Board at the researchers' university. After obtaining informed consent, we distributed the questionnaire link to each teacher. All respondents were required to fill in basic identifiable information and questionnaires on perceived school goal structure, professional identity, BPNS, and growth mindsets.

2.3 Measures

2.3.1 Perceived school goal structure

A two-dimensional goal structure scale was used to gauge teachers' perceived school goal structure (Skaalvik and Skaalvik, 2011). Prior research has demonstrated that the scale is sufficiently valid and reliable (Skaalvik and Skaalvik, 2013). This scale includes six items in two dimensions: school learning goal structure (e.g., "My school places great emphasis on creating a safe and inspiring learning environment") and school performance goal structure (e.g., "The school I teach emphasizes students' scores in academic tests very much"). Responses were rated on a six-point scale (1 = *completely disagree*; 6 = *completely agree*). A higher average score indicates a greater degree of perceived school goal structure. The Cronbach's α of the perceived school learning and performance goal structure scales in this study were 0.93 and 0.94, respectively.

2.3.2 Basic psychological needs satisfaction

BPNS was measured using the satisfaction subscale of the Basic Psychological Need Scale (Deci and Ryan, 2000). The relevant measure

has demonstrated adequate reliability and validity in Chinese kindergarten teachers (Song et al., 2021). This scale comprises 12 items (e.g., "People who often deal with me tend to consider my feelings"). Answers were rated on a seven-point scale (1 = *completely disagree*; 7 = *completely agree*). A higher average score indicates greater BPNS. The Cronbach's α was 0.97.

2.3.3 Growth mindset

Growth mindset was measured using the Growth Mindset Scale (Dweck, 2006). This scale has shown adequate reliability and validity in studies addressing Chinese teachers (Liu et al., 2025). The scale comprises three growth mindset items and three fixed mindset items (e.g., "I can learn new knowledge, but my intelligence level cannot be changed"). Responses were rated on a seven-point scale (1 = *completely disagree*; 7 = *completely agree*). The fixed mindset items were reverse-scored. A higher average score indicates a greater likelihood of having a growth mindset. The Cronbach's α was 0.60.

2.3.4 Professional identity

Professional identity was measured using the Teacher Professional Identity Scale's professional belonging and professional efficacy subscale (Li and Yan, 2018). Previous studies have shown good reliability and validity for this scale among Chinese teachers (Wang, 2025). The scale comprises nine items (e.g., "Being a teacher can realize my life value"). Responses were rated on a five-point scale (1 = *completely disagree*; 5 = *completely agree*). A higher average score indicates a higher degree of professional identity. The Cronbach's α was 0.95.

2.3.5 Teaching performance

The teaching performance was measured using a single item: "Compared to others, how would you rate your teaching performance?" Responses were rated on a five-point scale (1 = *very bad*; 5 = *very good*). A higher score indicates a higher degree of teaching performance.

2.4 Data analysis

IBM SPSS 27.0 was used for all statistical analyses. Descriptive statistics and correlation analyses were conducted for all variables. The mediating role of BPNS and the moderating effect of a growth mindset

¹ www.wjx.cn

were analyzed using SPSS PROCESS 4.0 and Macro Models 4 and 7 (Hayes, 2015). We assessed the unconditional indirect effects using a bootstrapping approach that comprised 5,000 resamples. The impact was considered statistically significant when the 95% confidence interval (CI) did not include zero. All continuous variables were standardized. Both models controlled for gender, age, teaching performance, and socioeconomic status. When examining the model of school learning goal structure on professional identity, the school performance goal structure was controlled; when reviewing the model of school performance goal structure on professional identity, the school learning goal structure was controlled.

3 Results

3.1 Descriptive and correlational analyses

Descriptive statistics and correlation analysis revealed that school learning goal structure was significantly and positively correlated with school performance goal structure, BPNS, growth mindset, and professional identity (Table 1). School performance goal structure was positively correlated with BPNS and professional identity. BPNS was positively correlated with a growth mindset and professional identity. Moreover, a growth mindset was significant and positively correlated with professional identity.

3.2 Tests of mediating effects of basic psychological needs satisfaction

We examined the mediating effect of BPNS on the relationship between school learning goal structure and professional identity. As shown in Table 2 and Figure 2, school learning goal structure was positively correlated with BPNS ($\beta = 0.41$, $SE = 0.02$, $p < 0.001$) and professional identity ($\beta = 0.18$, $SE = 0.02$, $p < 0.001$). BPNS was positively connected with professional identity ($\beta = 0.64$, $SE = 0.02$, $p < 0.001$). Further analysis using the bias-corrected bootstrap technique ($n = 5,000$) demonstrated a significant mediating effect of

BPNS ($\beta = 0.26$, $SE = 0.02$, 95% CI [0.23, 0.31]). Therefore, BPNS significantly mediated the relationship between school learning goal structure and professional identity.

Furthermore, we examined the mediating effect of BPNS on the relationship between school performance goal structure and professional identity. As shown in Table 3 and Figure 2, school performance goal structure was positively correlated with BPNS ($\beta = 0.12$, $SE = 0.02$, $p < 0.001$); however, it was not significantly connected with professional identity ($\beta = -0.03$, $SE = 0.02$, $p > 0.05$). BPNS was positively associated with professional identity ($\beta = 0.64$, $SE = 0.02$, $p < 0.001$). Further analysis using the bias-corrected bootstrap technique ($n = 5,000$) demonstrated a significant mediating effect of BPNS ($\beta = 0.08$, $SE = 0.02$, 95% CI [0.05, 0.11]). Therefore, BPNS significantly mediated the relationship between school performance goal structure and professional identity.

3.3 Tests of moderating effects of growth mindset

We examined the moderating effect of growth mindsets on the relationship between school learning goal structure and professional identity (Table 4). The results indicated that the interaction effect of school learning goal structure and growth mindset on BPNS was not significant ($\beta = -0.02$, $t = 0.03$, $p > 0.05$). This result indicated that the moderating effect of a growth mindset on the relationship between school learning goal structure and BPNS was not significant.

Furthermore, we examined the moderating effect of growth mindsets on the relationship between school performance goal structure and professional identity (Table 5). The results revealed that the interaction effect of school performance goal structure and growth mindset on BPNS was significant ($\beta = -0.04$, $t = 0.02$, $p < 0.05$). This result indicated that the moderating effect of a growth mindset on the relationship between school performance goal structure and BPNS was significant.

We performed a simple slope analysis to further investigate the moderating role of growth mindsets in the relationship between school performance goal structure and professional identity. A

TABLE 1 Correlations and descriptive statistics of the variables.

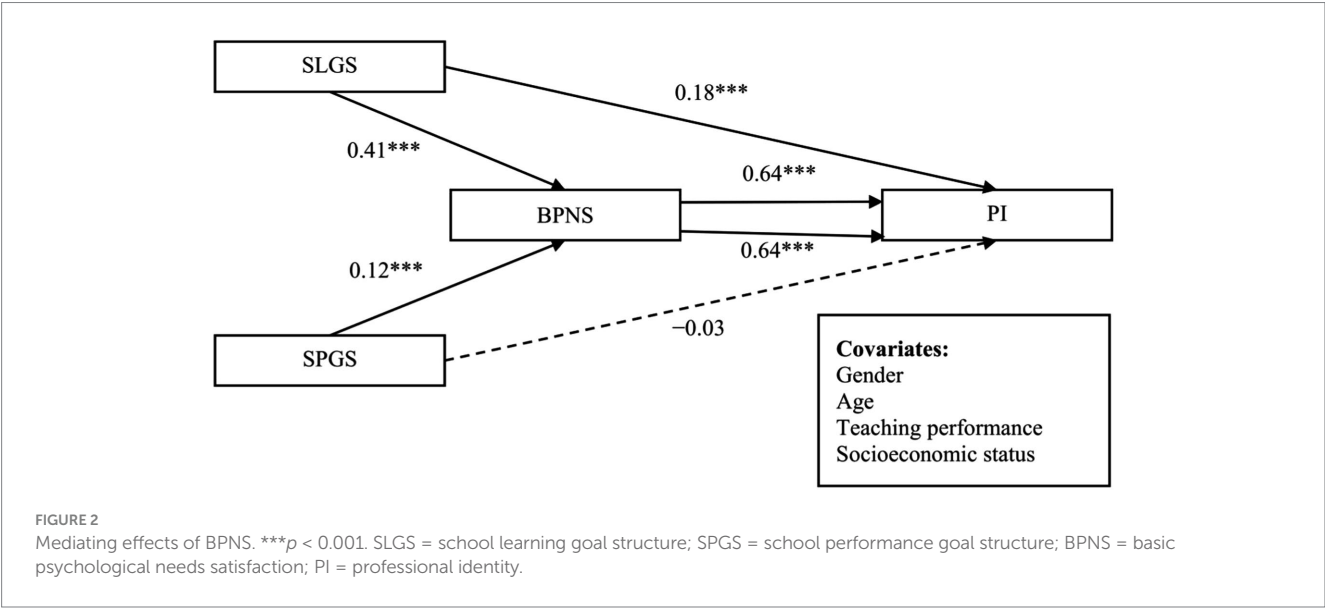
Variable	1	2	3	4	5	6	7	8	9
1. Gender	1.00								
2. Age	0.04	1.00							
3. TP	0.05	0.23***	1.00						
4. SES	0.04	-0.12***	0.07**	1.00					
5. SLGS	-0.05*	0.08**	0.20***	0.07**	1.00				
6. SPGS	0.03	-0.08**	0.08**	0.00	0.25***	1.00			
7. BPNS	0.02	0.15***	0.22***	0.11***	0.48***	0.23***	1.00		
8. GM	-0.02	-0.04	0.08**	0.10***	0.13***	-0.02	0.18***	1.00	
9. PI	0.02	0.17***	0.25***	0.08**	0.49***	0.17***	0.74***	0.09***	1.00
<i>M</i>	—	34.01	3.74	2.80	5.61	4.60	6.02	3.70	4.43
<i>SD</i>	—	8.41	0.83	0.77	0.65	1.56	1.01	0.82	0.64

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Gender was coded as 0 = man and 1 = woman. TP = teaching performance; SES = socioeconomic status; SLGS = school learning goal structure; SPGS = school performance goal structure; BPNS = basic psychological needs satisfaction; GM = growth mindset; PI = professional identity.

TABLE 2 Test of the mediating effect of BPNS on the relationship between school learning goal structure and professional identity.

		β	SE	t	95% CI	R ²	F
Equation 1: BPNS	SLGS	0.41	0.02	17.52***	[0.37, 0.46]	0.27	91.60***
	Gender	0.03	0.13	1.19	[-0.10, 0.42]		
	Age	0.16	0.02	4.87***	[0.07, 0.16]		
	TP	0.09	0.02	4.00***	[0.05, 0.14]		
	SES	0.09	0.02	3.84***	[0.04, 0.13]		
	SPGS	0.12	0.02	5.20***	[0.08, 0.17]		
Equation 2: PI	SLGS	0.18	0.02	8.91***	[0.14, 0.22]	0.57	281.70***
	BPNS	0.64	0.02	31.85***	[0.60, 0.68]		
	Gender	0.09	0.10	0.83	[-0.12, 0.29]		
	Age	0.04	0.02	2.14*	[0.00, 0.07]		
	TP	0.07	0.02	3.66***	[0.03, 0.10]		
	SES	-0.01	0.02	-0.36	[-0.04, 0.03]		
	SPGS	-0.03	0.02	-1.41	[-0.06, 0.01]		

* $p < 0.05$, *** $p < 0.001$. Gender was coded as 0 = man and 1 = woman. TP = teaching performance; SES = socioeconomic status; SLGS = school learning goal structure; SPGS = school performance goal structure; BPNS = basic psychological needs satisfaction; PI = professional identity.



standard deviation above and below the mean ($M \pm SD$) was used to calculate the effect value of school performance goal structure on BPNS. As shown in Figure 3, teachers with strong growth mindsets experienced higher BPNS than those with weak growth mindsets, regardless of their school performance goal structure level. Teachers with weak growth mindsets exhibited stronger associations between school performance goal structure and BPNS ($\beta = 0.17$, $SE = 0.03$, 95% CI [0.11, 0.23], $p < 0.001$) than those with strong growth mindset ($\beta = 0.09$, $SE = 0.03$, 95% CI [0.04, 0.15], $p < 0.001$). In addition, this study examined whether the mediating effect of school performance goal structure on professional identity via BPNS was conditioned by growth mindsets. The result revealed that the mediating effects of BPNS were stronger among teachers with weak growth mindsets ($\beta = 0.11$, $SE = 0.02$, 95% CI [0.07, 0.16]) than those with strong growth mindsets ($\beta = 0.06$, $SE = 0.02$, 95% CI [0.03, 0.09]).

4 Discussion

4.1 Relationship between perceived school goal structure and professional identity

The findings underscored the intricate relationship between kindergarten teachers' perceived school goal structures and their professional identity. Specifically, the results indicated that school learning and performance goal structures indirectly affected professional identity through BPNS. However, only the school learning goal structure directly affected professional identity, partially supporting H1. This distinction is crucial, as it highlights the differential impact of school goal structures on teachers' professional development and wellbeing.

The positive correlation between school learning goal structure and professional identity expands previous research (Skaalvik and

TABLE 3 Test of the mediating effect of BPNS on the relationship between school performance goal structure and professional identity.

		β	SE	t	95% CI	R ²	F
Equation 1: BPNS	SPGS	0.12	0.02	5.20***	[0.08, 0.17]	0.27	91.60***
	Gender	0.16	0.13	1.19	[−0.10, 0.42]		
	Age	0.11	0.02	4.87***	[0.07, 0.16]		
	TP	0.09	0.02	4.00***	[0.05, 0.14]		
	SES	0.09	0.02	3.84***	[0.04, 0.13]		
	SLGS	0.41	0.02	17.52***	[0.37, 0.46]		
Equation2: PI	SPGS	−0.03	0.02	−1.41	[−0.06, 0.01]	0.57	281.70***
	BPNS	0.64	0.02	31.85***	[0.60, 0.68]		
	Gender	0.09	0.10	0.83	[−0.12, 0.29]		
	Age	0.04	0.02	2.14*	[0.00, 0.07]		
	TP	0.07	0.02	3.66***	[0.03, 0.10]		
	SES	−0.01	0.02	−0.36	[−0.04, 0.03]		
	SLGS	0.18	0.02	8.91***	[0.14, 0.22]		

* $p < 0.05$, *** $p < 0.001$. Gender was coded as 0 = man and 1 = woman. TP = teaching performance; SES = socioeconomic status; SLGS = school learning goal structure; SPSGS = school performance goal structure; BPNS = basic psychological needs satisfaction; PI = professional identity.

TABLE 4 Test of the moderating effect of growth mindset on the relationship between school learning goal structure and professional identity.

		β	SE	t	95% CI	R ²	F
Equation 1: BPNS	SLGS	0.40	0.02	16.58***	[0.35, 0.44]	0.29	74.48***
	GM	0.13	0.02	5.35***	[0.08, 0.17]		
	SLGS × GM	−0.02	0.03	−0.61	[−0.07, 0.04]		
	Gender	0.16	0.13	1.24	[−0.10, 0.42]		
	Age	0.12	0.02	5.21***	[0.08, 0.17]		
	TP	0.09	0.02	3.68***	[0.04, 0.13]		
	SES	0.08	0.02	3.46***	[0.03, 0.12]		
	SPGS	0.13	0.02	5.53***	[0.08, 0.17]		
Equation2: PI	SLGS	0.18	0.02	8.91***	[0.14, 0.22]	0.57	281.70***
	BPNS	0.64	0.02	31.85***	[0.60, 0.68]		
	Gender	0.09	0.10	0.83	[−0.12, 0.29]		
	Age	0.04	0.02	2.14*	[0.00, 0.07]		
	TP	0.07	0.02	3.66***	[0.03, 0.10]		
	SES	−0.01	0.02	−0.36	[−0.04, 0.03]		
	SPGS	−0.03	0.02	−1.41	[−0.06, 0.01]		

* $p < 0.05$, *** $p < 0.001$. Gender was coded as 0 = man and 1 = woman. TP = teaching performance; SES = socioeconomic status; SLGS = school learning goal structure; SPSGS = school performance goal structure; BPNS = basic psychological needs satisfaction; GM = growth mindset; PI = professional identity.

Skaalvik, 2023; Sun et al., 2025), suggesting that a mastery-oriented environment emphasizing continuous learning and personal growth fosters strong professional identity among teachers. In such environments, teachers are likely to feel valued for their contribution to students’ holistic development, enhancing their sense of belonging and commitment to their profession. Notably, the absence of a direct effect of the school performance goal structure on professional identity suggests that professional identity stems not only from external evaluations and recognition but also, more importantly, from teachers’ internal experiences and feelings. The school performance goal structure cannot fully capture teachers’ professional identity. Only when it influences teachers’ BPNS and intrinsic

motivation can it further affect their professional identity development.

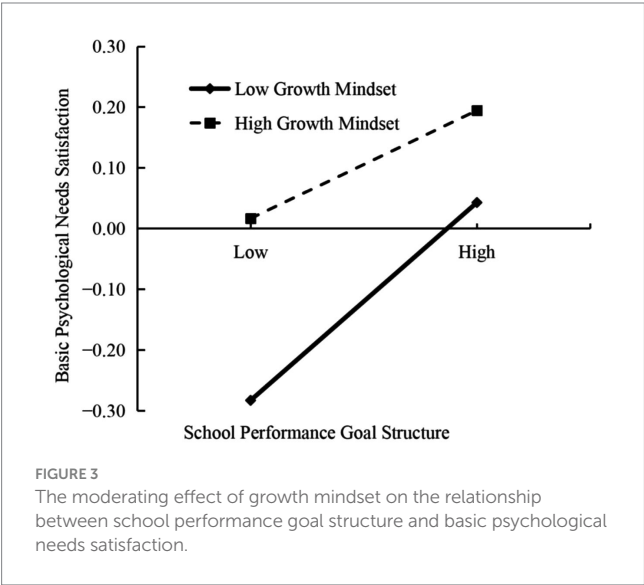
4.2 Mediating effect of basic psychological needs satisfaction

BPNS mediated the relationship between the two forms of perceived school goal structures and professional identity. This finding supports H2 and is in accordance with the self-determination theory (Deci and Ryan, 1985). This result extends previous research indicating that BPNS mediates the relationship between the two forms of perceived school goal

TABLE 5 Test of the moderating effect of growth mindset on the relationship between school performance goal structure and professional identity.

		β	SE	t	95% CI	R ²	F
Equation 1: BPNS	SPGS	0.13	0.02	5.74***	[0.09, 0.18]	0.29	74.48***
	GM	0.11	0.02	4.83***	[0.07, 0.16]		
	SPGS × GM	−0.04	0.02	−2.14*	[−0.07, −0.00]		
	Gender	0.17	0.13	1.32	[−0.08, 0.43]		
	Age	0.12	0.02	5.22***	[0.08, 0.17]		
	TP	0.09	0.02	3.77***	[0.04, 0.13]		
	SES	0.08	0.02	3.53***	[0.04, 0.12]		
	SLGS	0.40	0.02	16.70***	[0.35, 0.44]		
Equation2: PI	SPGS	−0.03	0.02	−1.41	[−0.06, 0.01]	0.57	281.70***
	BPNS	0.64	0.02	31.85***	[0.60, 0.68]		
	Gender	0.09	0.10	0.83	[−0.12, 0.29]		
	Age	0.04	0.02	2.14*	[0.00, 0.07]		
	TP	0.07	0.02	3.66***	[0.03, 0.10]		
	SES	−0.01	0.02	−0.36	[−0.04, 0.03]		
	SLGS	0.18	0.02	8.91***	[0.14, 0.22]		

* $p < 0.05$, *** $p < 0.001$. Gender was coded as 0 = man and 1 = woman. TP = teaching performance; SES = socioeconomic status; SLGS = school learning goal structure; SPSGS = school performance goal structure; BPNS = basic psychological needs satisfaction; GM = growth mindset; PI = professional identity.



structures and professional identity. Previous research suggests that a learning environment that focuses on competence (such as a school learning goal structure) provides appropriate support for individuals' autonomy and competence, thereby facilitating their BPNS (Ameloot et al., 2024). Conversely, school performance goal structure, which overly emphasizes external evaluation and competition, could undermine teachers' perceived autonomy and competence, and potentially lower their sense of belonging (Ketonen and Nieminen, 2025; Nerstad et al., 2020; Schwarz-Franco and Hadar, 2024). However, in contrast to previous studies, this investigation found that school learning and performance goal structures were positively associated with BPNS. This could be because teachers might perceive the organization's attention and support as satisfying the three basic psychological needs if the external evaluation within a performance goal structure is constructive.

Another possible explanation is that, within the collectivist cultural context of China, school performance goal structure may carry different meanings than those in individualist Western culture. In collectivist cultures, individual behavior and achievements are often closely linked to the group's interests. Therefore, Chinese teachers may be more inclined to view external evaluations (e.g., performance appraisals and competition) as important sources of social recognition and collective achievement rather than mere pressure or anxiety (Luo et al., 2020). In China, parents greatly emphasize their children's education and academic performance in kindergarten. Many children aged 3–6 are enrolled by their parents in full-day early childhood education programs in kindergartens (Gao et al., 2024), such as early English instruction (Shi and Yeung, 2024). Amid this cultural context and societal expectations, teachers who perceive a high-performance school goal structure may view the school's emphasis on student achievement as an opportunity to gain evaluation and recognition, which can satisfy their basic psychological needs, such as a sense of belonging and competence. This finding suggests that educational administrators should fully consider the influence of cultural background when designing and implementing school goal structure to target the promotion of teachers' professional development and mental health.

4.3 Moderating effect of growth mindset

Consistent with H3, we found that growth mindsets significantly moderated the connection between school performance goal structure and BPNS. Specifically, regardless of the degree to which the school leans toward a performance goal structure, teachers with strong growth mindsets exhibited higher satisfaction with their BPNS than those with weak growth mindsets. This finding aligns with past research indicating that the school working environment can interact with a growth mindset to jointly influence teachers' professional

development (Zhang and He, 2024). Mindset influences the cognitive processing of information, thereby affecting judgments of personal self-efficacy (Bardach et al., 2024). Teachers with strong growth mindsets typically believe in the malleable nature of teaching (for instance, the ability to complete teaching tasks flexibly and professionally) and think they can overcome obstacles by taking action (Yeager and Dweck, 2012). Therefore, when facing job demands imposed by the school performance goal structure, they are motivated to exert effort to adapt and adjust their teaching strategies and methods (Lin et al., 2022). In this process of continuous self-transcendence, teachers also experience satisfaction with basic psychological needs such as competence. This result supports Dweck's social-cognitive framework (Dweck and Leggett, 1988) and the job demands-resources model (Bakker and Demerouti, 2007).

Notably, the effect of the school performance goal structure on BPNS was weaker among teachers with strong growth mindsets than among those with weak growth mindsets. In other words, as schools increasingly leaned toward adopting performance goal structure, the positive impact of a growth mindset paradoxically diminished. This indicates that the school performance goal structure undermines the positive effect of a growth mindset. Mindsets guide individuals toward different types of achievement goals (Dweck and Yeager, 2019). Teachers with strong growth mindsets believe that effort can alter ability and tend to pursue mastery goals (Bardach et al., 2024). Consequently, these mindsets may conflict with the school performance goal structure (Skaalvik and Skaalvik, 2023). In this context, teachers with a strong growth mindset may need to expend considerable psychological effort to adapt to the school performance goal structure, which diminishes the positive impact of a growth mindset on teachers' BPNS.

However, contrary to H3, the results showed that growth mindsets did not significantly moderate the relationship between school learning goal structure and BPNS among kindergarten teachers. This finding is inconsistent with past research that has identified a positive moderating role of growth mindset (Zhang and He, 2025) but can be explained by a recent study (Lee et al., 2023). This study argues that teachers with a stronger growth mindset have a positive view of the program when perceived resources and support for implementing a positive education program are insufficient. In contrast, their growth mindsets are unrelated to their views of the program when perceived resources and support are sufficient. Similarly, schools with a performance goal structure tend to lead to social comparison and competition between teachers and students and provide insufficient positive resources (Anderman et al., 2024; Skaalvik and Skaalvik, 2023). Therefore, a growth mindset has a significant moderating effect in this context. However, schools with a learning goal structure also show a high level of concern for teachers' personal growth, which is conducive to meeting teachers' basic psychological needs and enhancing teachers' wellbeing (Wang et al., 2014). Therefore, in such a school culture, whether teachers have a growth mindset is less relevant.

4.4 Implications and limitations

This study offers a novel perspective on the factors influencing kindergarten teachers' professional identity. Our findings hold significant theoretical implications for future studies and provide

meaningful insights for practice and policy. First, the results demonstrated the critical role of school goal structures and indicated that only school learning goal structure effectively enhanced kindergarten teachers' professional identity. This finding underscores that schools can shift the focus of education toward mastery of content rather than the pursuit of competition and good performance. Communicating these educational goal and values to teachers can strengthen their professional identity. Second, our findings revealed the crucial mediating effect of BPNS on the relationship between perceived school goal structures and teachers' professional identity. This result indicates that BPNS is a core driver of teachers' professional identity. Therefore, kindergarten leaders should encourage teachers to have greater voice and agency in decision-making processes and to exercise more autonomy in their professional practices. Finally, the results highlight the significant moderating role of growth mindsets in the relationship between school goal structures and professional identity among kindergarten teachers. Therefore, supporting teachers in developing teaching practices that align with a growth mindset is crucial. Kindergarten leaders should find ways to educate teachers on adopting a growth mindset in learning and implementing more growth-oriented teaching strategies. For example, they can cultivate teachers' mastery-oriented teaching, normalize challenges and mistakes in learning, and focus on feedback and assessment that emphasize process and effort rather than performance and personal ability (Laine and Tirri, 2023).

This study has some limitations. First, the cross-sectional design prevented the identification of causal relationships. Future research should employ longitudinal designs to validate these findings further. Second, the data collection in this study relied on teachers' self-reports. This single-source method may have introduced a subjective bias, thereby affecting the objectivity of the results. To minimize the potential social desirability effects, future studies should explore diverse information sources, such as incorporating reports from parents and colleagues, to form a comprehensive and objective dataset. Third, the population of kindergarten teachers in China is predominantly female, and our sample similarly exhibits this gender imbalance, which aligns with prior research (Ren et al., 2024). Although we controlled for gender in our statistical analyses to mitigate its potential influence on the results, this influence cannot be eliminated. Future research should consider separately comparing the two distinct groups of female and male teachers to further explore gender differences in the impact of perceived school goal structures on teachers' professional identity. Finally, as this study focused on kindergarten teachers in China, our conclusions may be limited to China's specific educational environment and social context. To test the generalizability of the findings, future research should expand the sample size and compare the impact mechanisms of perceived school goal structures on professional identity across various cultural backgrounds.

5 Conclusion

This study examined the differences in the underlying mechanisms of the impact of two types of perceived school goal structures on professional identity among kindergarten teachers in China. The results suggest that kindergartens should actively construct a learning goal structure to enhance teachers' professional

identity. Additionally, both types of perceived school goal structures enhance BPNS, which in turn promotes the development of professional identity among kindergarten teachers. Notably, the growth mindset exhibited differential moderating effects on these relationships, specifically moderating the relationship between school performance goal structure and BPNS. This study lays a solid theoretical foundation for developing effective interventions to enhance teachers' professional quality and promote educational development. However, the generalizability of the research findings may be affected by the self-report method and the limitations of the sample. Hence, future research should employ more diverse data collection methods to further explore the specific impact of perceived school goal structures on kindergarten teachers' professional identity across different cultural contexts, thereby deepening the understanding of this field.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by the Academic Ethics Review Board of Guangzhou University (protocol code: GZHU2024044). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

WL: Conceptualization, Formal analysis, Funding acquisition, Methodology, Project administration, Validation, Writing – original draft, Writing – review & editing. XN: Conceptualization, Data curation, Methodology, Writing – original draft, Writing – review & editing. CW: Writing – original draft, Writing – review & editing. JW: Writing – original draft, Writing – review & editing. YZ:

Writing – original draft, Writing – review & editing. CY: Investigation, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Parental involvement of immigrant parents in early educational centers and its relationship with intercultural sensitivity

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Introduction: Early education centers play a crucial role in children's development. Research shows this process is partly supported by parental involvement in activities promoted by these centers. Additionally, early education helps reduce disparities and fosters inclusion of disadvantaged groups, such as immigrant families. These families often face barriers for their involvement, including limited understanding of the local culture, and teachers' awareness of their cultural backgrounds and expectations. Literature suggests that interculturally sensitive practices addressing families' cultural and linguistic needs can foster more effective communication between parents and teachers. Intercultural sensitivity, the affective dimension of intercultural communication, is a personal capacity enabling individuals to recognize and accept cultural differences while identifying commonalities. Thus, enhancing intercultural sensitivity within the educational community may support greater immigrant parental involvement in their children's education. This study examines the role of intercultural sensitivity in predicting immigrant parental involvement in early education in Chile.

Methods: Using a sample of 347 immigrant parents, we assessed parental involvement levels, intercultural sensitivity, and perceived facilitators and barriers to participation, with several sociodemographic variables.

Results: Results from multinomial logistic regression showed that higher intercultural sensitivity significantly predicted greater parental involvement in children's educational activities. Parents with lower intercultural sensitivity were 75% more likely to report "almost never" participating than those with high intercultural sensitivity. The educational level also played a role, as parents with technical education were significantly less involved than those with university education. Among facilitators, a positive climate among parents increased the odds of always participating, while the presence of other immigrant families in school paradoxically correlated with lower involvement. Regarding barriers, parents who perceived that the school lacked a special approach for immigrant families were 3.79 times more likely to report low participation.

Discussion: These findings highlight the importance of fostering intercultural sensitivity in school communities to enhance immigrant parental engagement in early education. Implications for educational policy and practices promoting inclusive and culturally responsive environments are discussed.

KEYWORDS

immigrant parents, parental involvement, intercultural sensitivity, immigrant early education, intercultural education

1 Introduction

Infants' development is particularly influenced by two environments: their home and the early education center (Halgunseth et al., 2009). In this regard, the relationship between families and their teachers is crucial, as the family is the first environment in which the child grows up and learns (Barahona Cruz et al., 2023; Keles et al., 2024). The study of parental involvement with early education centers has revealed that this participation supports children's learning processes, establishes positive relationships with teachers and peers, develops socio-emotional tools, and acquires skills necessary for the transition into school (Barahona Cruz et al., 2023; Kang et al., 2024; Şahin et al., 2013; Sylva et al., 2004). In this context, the actions of parents and their role in their children's early education are crucial, ranging from their involvement in the classroom (Rolla and Rivadeneira, 2006) to the home-based practices in which they participate (Kang et al., 2024; Kim and Yu, 2024).

Early education constitutes a fundamental educational space for children, providing the tools and stimulation necessary for adequate cognitive, emotional, and social development. Literature has shown that high-quality early education has positive effects on emotional self-regulation, preschool preparation, language development, understanding of the world, school success, and social competencies in both the short and long term (Barahona Cruz et al., 2023; Cebolla Boado, 2008; Kalmijn, 2024; Kang et al., 2024; Pinto and Misas, 2014; Rolla and Rivadeneira, 2006; Romero Díaz, 2024; Vargas Fonseca, 2024; Yamamoto and Li, 2012; Yoshikawa et al., 2013). Furthermore, early education also presents an opportunity to close socioeconomic gaps, reduce school dropout rates and juvenile crime, and promote the social inclusion of disadvantaged groups (Barnett and Frede, 2010; Hughes, 2022; Keles et al., 2024; Otero Bracco and Eisenberg, 2017).

Thus, a study in socioeconomically disadvantaged communities showed that parental involvement in early childhood education is important for performance in kindergarten and throughout the subsequent years of primary education, generating student motivation, positively impacting their academic performance, and, in turn, encouraging parents to remain engaged in their children's education (Hayakawa et al., 2013). On the other hand, a study conducted with Latino immigrant parents in the United States has demonstrated the importance of early education centers, according to parents, for the socialization of their children and their integration into the community (Sánchez-Suzuki Colegrove, 2022), highlighting that parents value the role of early education beyond just school outcomes. However, other studies in the same context have emphasized how the perception of early education as too individualistic or inappropriate for learning affects parents' hesitance to send their children to non-family-based early childcare (Yamamoto and Li, 2012). Parental involvement has seldom been studied in Chile (Lara and Saracostti, 2019) and even less in early education, beyond noting the importance of incorporating family into this process and acknowledging the culture and language of the home (Rolla and Rivadeneira, 2006).

When parents come from different cultural backgrounds than those of their children's early educators, their beliefs and practices, educational

levels, origins, expectations, and other family-related aspects can impact how children participate in early education (Fantuzzo et al., 2000; Kang et al., 2024; Xi and Wang, 2024; Yamamoto and Li, 2012). The more involved parents are, the better their children's chances for academic success and social and emotional development (Arzubiaga et al., 2009; Barahona Cruz et al., 2023; Sylva et al., 2004). However, immigrant parents face unique challenges related to economic, cultural, social, and linguistic barriers (Barahona Cruz et al., 2023; Kalmijn, 2024; Kong et al., 2024; Pérez-Domínguez, 2024; Xi and Wang, 2024), which hinder their involvement in their children's education. Several studies have shown that immigrant parents tend to exhibit low levels of school involvement across different stages of children's education. This is often due to the fact that these parents typically have low educational levels, low incomes, and precarious work conditions, which negatively affect their motivation and ability to actively participate in their children's schooling processes (Antony-Newman, 2018; Calzada et al., 2015; Friedman et al., 2006; González-Falcón et al., 2022).

The length of stay in the host society can also be a factor, as it influences knowledge and comprehension of the local culture, particularly the host country's educational system (Mera-Lemp et al., 2025). Moreover, what is understood as parental involvement may be culturally divergent (Hoover-Dempsey et al., 2005; Keles et al., 2024) and, therefore, may not necessarily align with teachers' expectations and perceptions of involvement. For instance, parents from collectivistic cultures tend to stress the value of respect and discipline; thus, they may be more likely to understand their role in complying with the school's explicit requests. In contrast, individualistic cultures, characterized by a lesser distance to power in social relationships and a strong orientation toward goal achievement, may emphasize supporting children in fulfilling their personal aims and being more proactive in their relationships with teachers (Bornstein, 2017; Bornstein and Cote, 2006; Gallardo, 2019).

In Chile, according to the most recent data, it is estimated that 8.8% of the population is composed of foreigners, mainly from other Latin American and Caribbean countries (Encuesta de Caracterización Socioeconómica Nacional, 2022; Instituto Nacional de Estadísticas and Departamento de Extranjería y Migración, 2022; Servicio Jesuita a Migrantes, 2022). A total of 13% of this percentage comprises children and teenagers (Servicio Nacional de Migraciones, 2023), with currently 10,332 children enrolled in early education programs (Fondo de las Naciones Unidas para la Infancia and Instituto Nacional de Estadísticas, 2023); however, this number does not consider children born in Chile to immigrant parents or those with irregular immigration statuses, which means the magnitude of this phenomenon is invisibilized. Moreover, generally speaking, there is a 20% lower chance for immigrant children to attend early education centers compared to their Chilean peers (Ministerio de Relaciones Exteriores de Chile, 2024), despite the positive effect that early education has on social mobility and inclusion (Barnett and Frede, 2010; Cebolla Boado, 2008; Hughes, 2010; Kim and Kang, 2024; Turaşlı, 2016; Yamamoto and Li, 2012).

Literature has suggested that interculturally sensitive practices, which respond to the cultural and linguistic needs of families, may

generate more effective communication between parents and teachers in early education (Barahona Cruz et al., 2023; Yamamoto and Li, 2012). Intercultural sensitivity is understood as the affective dimension of intercultural communication, encompassing the skills to manage the emotions that arise from intercultural exchanges and to express positive emotional responses (Chen and Starosta, 2000; Ruiz-Bernardo et al., 2024). It is essential for addressing the cultural differences of contemporary multicultural societies (Pastena et al., 2024), as it enables communication that recognizes and accepts these differences while also discovering cultural similarities (Martínez-Zelaya et al., 2020; Sell, 2017).

According to Chen and Starosta (2000), intercultural sensitivity encompasses different capabilities, such as individuals' abilities to appropriately receive and respond to messages in encounters with others, adjusting their cognitive frames and behaviors during interactions with diverse individuals. Additionally, it requires a willingness to engage in intercultural communication. Another important aspect concerns individuals' attitudes toward cultural differences, specifically in terms of respect and acceptance, as well as their confidence in achieving positive results in these intercultural exchanges. Positive emotional experiences through intercultural communication also play a key role in these processes, allowing individuals to construct positive expectations about future intercultural encounters, thereby motivating them to interact in multicultural settings. Conversely, the absence of these capabilities could lead to expectations of negative outcomes from intercultural interactions, affecting attitudes toward communicating with people from different cultural backgrounds and potentially leading to the avoidance of intergroup contact (Bhawuk et al., 2008; Ulrey and Amason, 2001).

Studies conducted with teachers have shown that their own development of intercultural sensitivity influences their attitudes toward integrating immigrant students and their families into the schools (Mera-Lemp et al., 2024). Additionally, it has been suggested that this capability is affected by cultural threats and negative emotions (Mera-Lemp et al., 2024), their own biases and attitudes (Keles et al., 2024), and cultural empathy (Ryu, 2022). Teachers serve as a bridge between families and early educational centers and must, therefore, adapt their pedagogical practices and communication to the individual and cultural characteristics and needs of both the children and the parents (Barahona Cruz et al., 2023; Kattas et al., 2024; Özdoğru et al., 2024).

On the other hand, immigrant parents actively carry their cultural beliefs and expectations and negotiate these with the norms of the host society (Yamamoto and Li, 2012). Their awareness of the importance of supporting their children's development in early education can motivate them to adjust their beliefs and practices in school settings (Kong et al., 2024; Subramaniam, 2011). Yet, as posed earlier, teachers may not perceive parents as involved as they should be since they do not necessarily account for diverse approaches to what is considered involvement (Kalmijn, 2024; Keles et al., 2024; Massing et al., 2013; Sánchez-Suzuki Colegrove, 2022). Historically, Chilean public policies have viewed cultural differences as obstacles to overcome rather than strengths to consider (Castillo Lobos and Contreras Valeria, 2023); this translates into early education as well, where the curriculum pushes for multiculturalism and diverse approaches without providing the tools necessary to implement them.

In addition, intercultural sensitivity can be an asset in enhancing immigrant parents' involvement in their children's education. Daily contact with teachers and participation in school activities, such as

parent-teacher meetings and extracurricular events, involve direct interaction with educators and school staff, as well as with local families (Hayakawa et al., 2013; Sohn and Wang, 2006). Even though there is scarce evidence about this relationship, recent studies have shown that cultural sensitivity plays a significant role in explaining immigrant parents' school involvement, motivating them to interact with school members (Mera-Lemp et al., 2025). Additionally, studies conducted with immigrant school students (Lahoz i Ubach, and Cordeu Cuccia, 2021) have reported that high levels of intercultural sensitivity are associated with positive perceptions of the school climate. In the case of university students in multicultural educational contexts, it has been linked with high levels of involvement in both formal and informal academic activities (Tamam and Krauss, 2017).

However, other aspects could influence parents' school participation. According to Hoover-Dempsey and Sandler's (1997) model explaining parents' involvement, explicit invitations to engage in the school community, a welcoming and warm school climate, and perceived self-efficacy and confidence are essential factors in promoting their commitment to children's schooling processes (Ferrara, 2015; Murray et al., 2014; Subramaniam, 2011). Additionally, the perception of respectful treatment and positive attitudes toward their cultural identities and parenting styles from school staff could also enhance their relationships and participation at school (Antony-Newman, 2018; Hoover-Dempsey et al., 2005; Khalfaoui et al., 2020; Mera-Lemp et al., 2025).

On the contrary, immigrant parents often face several barriers in their relationships with schools. It has been argued that since the school's role is related to transmitting the dominant group's culture, these parents may perceive cultural discontinuities or clashes between the values, beliefs, and behavioral guidelines they want their children to learn and those taught by teachers (Antony-Newman, 2018; Bourdieu and Passeron, 1990; Epstein, 2018; Hornby and Lafaele, 2011). Likewise, the perception of adverse school climates that could expose children to various forms of exclusion appears to be a critical issue, especially for parents belonging to minority groups (Baker et al., 2016; Reynolds et al., 2015). Thus, some immigrant parents tend to prefer enrolling their children in schools with a high presence of foreign families, as this facilitates their integration (Eberhard and Lauer, 2019). Nevertheless, further research is needed to understand the barriers and facilitators influencing parental involvement and the role of parents' intercultural sensitivity in early education.

The present study aimed to explore the variables that could predict immigrant parents' level of parental involvement in their children's school activities in Chilean early education centers. It is expected that parents' involvement is explained by their levels of intercultural sensitivity (H1) and also that this variable has more explicative potential than parents' educational level (H2.1) and their time of residence in Chile (H2.2).

2 Materials and methods

2.1 Participants

The study used a non-probabilistic convenience sampling method, considering that the participants were immigrants with children in their care attending early education centers at the pre-kindergarten and kindergarten levels in Chile. The sample was composed of 347 immigrant parents; their sociodemographic characteristics are explained in the following table, distributed by their level of parental involvement.

The parents were recruited by professional interviewers who visited areas near educational institutions ($k = 90$ schools) in the city of Santiago. Additionally, the study participants could recommend that others in their communities join the research. Each participant was interviewed individually, given a questionnaire, and assisted in case of doubts. The main inclusion criteria were as follows: (a) being of immigrant origin, (b) being the parent of a student enrolled in pre-kindergarten or kindergarten at an educational institution in Santiago, and (c) speaking Spanish fluently. The present study has received ethical permission from the Research Ethics Committee of Universidad Alberto Hurtado, considering all the standards of the Declaration of Helsinki.

2.2 Instruments

Descriptive statistics: each participant answered a series of questions that included their gender, age, educational level, country of origin, and the educational level of their son or daughter. [Table 1](#) presents a complete description of the sample characteristics. For the multinomial logistic regression, the category “incomplete high school” collapsed with “complete high school,” termed “high school” due to the low frequency of the former. Additionally, participants from nationalities not mentioned in [Table 1](#) were excluded for the same reason. Finally, time in Chile was transformed into quartiles (min = 0 and max = 16 years in Chile), with 2, 5, and 7 years of residence representing the 25th, 50th, and 75th percentiles, respectively.

Parental Involvement Scale ([Valdés Cuervo et al., 2009](#)): this instrument assesses parental involvement in their children's school activities and the educational process related to communication with the center (e.g., *attending parent and/or family meetings*) and participation (e.g., *participating in raffles, celebrations, and activities organized by the educational establishment*), as well as communication with educators (e.g., *talking to the teacher about your child's learning*) and the child (e.g., *talking to your child about their classmates*). We used 17 of the 23 original items, given that the instrument also included items about the context of the school

that were not pertinent to early education. The scale has a Likert format ranging from 1 (Never) to 4 (Always), with adequate reliability ($\alpha = 0.90$; $\omega = 0.92$, $X_{(113)} = 243.830$, $p < 0.001$; CFI 0.991; TLI 0.989; RMSEA 0.060 [0.050; 0.070]). Given that it is a discrete scale and few participants indicated “never” being involved, we summed the answers of the items and, based on the distribution, created three categories: (a) 1 (*almost never*): total score from 17 to 34; (b) 2 (*frequently*): total score from 35 to 67; (c) 3 (*always*): total score of 68. These three categories were used for the analysis.

The Intercultural Sensitivity Scale ([Chen and Starosta, 2000](#)), along with the Spanish version validated by [Martínez-Zelaya et al. \(2024\)](#), assesses the affective dimension of intercultural communication in terms of how effectively and respectfully individuals interact with people from diverse cultural backgrounds (e.g., “*When I speak with people from different cultures, I try to gather as much information as possible*”; e.g., “*When I talk to a person from another culture, I enjoy the differences between us.*”). It consists of 24 Likert-type items with four answer options (1: Totally disagree, to 5: Totally agree), demonstrating good reliability ($\alpha = 0.81$; $X_{(166)} = 252.106$, $p < 0.001$; CFI 0.965; TLI 0.942; RMSEA 0.040 [0.03; 0.05]).

Facilitators and barriers (ad hoc): finally, we constructed proxies for the facilitators and barriers that immigrant parents may encounter when participating in their child's educational process. These were based on the literature and interviews conducted with immigrant parents during the validation of the instruments. There were seven facilitators of parental participation in school activities: a *welcoming attitude from educators, respectful treatment by educators, the child feeling integrated with the rest of the class, educators attempting to understand their culture, customs, and parenting styles, a positive climate among parents, the school having other students from immigrant families, and the school offering a curriculum that integrates cultural diversity*. Additionally, six barriers were identified: *the child feeling rejected by peers, parents feeling rejected by other parents, feeling questioned by teachers for being different from Chileans, the school lacking a special approach for immigrant families, a lack of understanding of the Chilean educational system, and a short duration of stay in Chile*. The

TABLE 1 Sociodemographic characteristics by levels of parental involvement.

Variables	Almost never (N = 74)	Frequently (N = 116)	Always (N = 157)	Total (N = 347)
Gender Masculine	18 (24.3%)	27 (23.3%)	41 (26.1%)	86 (24.8%)
Feminine	56 (75.7%)	89 (76.7%)	116 (73.9%)	261 (75.2%)
Educative level incomplete high school	8 (10.8%)	9 (7.8%)	7 (4.5%)	24 (6.9%)
Complete high school	30 (40.5%)	49 (42.2%)	92 (58.6%)	171 (49.3%)
Technical/Professional education	29 (39.2%)	47 (40.5%)	25 (15.9%)	101 (29.1%)
University education	7 (9.5%)	11 (9.5%)	33 (21%)	51 (14.7%)
Country of origin Venezuela	31 (41.9%)	54 (46.6%)	81 (51.6%)	166 (47.8%)
Peru	15 (20.3%)	21 (18.1%)	33 (21%)	69 (19.9%)
Colombia	7 (9.5%)	21 (18.1%)	17 (10.8%)	45 (13%)
Haiti	18 (24.3%)	11 (9.5%)	13 (8.3%)	42 (12.1%)
Other	3 (4.1%)	9 (7.8%)	13 (8.3%)	25 (7.3%)
Age	33.24 (6.15)	33.48 (6.24)	33.72 (6.62)	33.53 (6.38)
Time of residence (years)	4.40 (2.66)	4.83 (2.99)	5.55 (3.02)	5.04 (2.96)

Numbers with the % symbol represent the percentage of cases (i.e., frequency) within the total of each variable. The numbers with decimals and those without the % symbol, represent the mean and the standard deviation, respectively.

question posed was, “Considering your experience, what do you think are the factors that facilitate/hinder the participation of immigrant parents in the education of their children?” Each of these variables was rated with a value of 0 (i.e., does not affect) or 1 (i.e., does affect).

2.3 Analysis

First, we performed descriptive analyses on the levels of participation in school activities, categorized into three levels (i.e., almost never [1], frequently [2], and always [3]), according to the characteristics of the participants (see Table 1). Additionally, we complemented these descriptions with either chi-squared or ANOVA tests—for categorical or numerical variables, respectively—to determine whether participation varied based on the characteristics of the sample. Subsequently, to test the main hypotheses, we conducted multinomial logistic regressions to predict the probability of parental involvement at different levels (i.e., almost never, frequently, and always). To achieve this, we used the descriptive variables measured as predictors, the parents’ levels of intercultural sensitivity, and, finally, the facilitators and barriers to participation indicated by the participants. To avoid multicollinearity and saturated models, we conducted these predictions in two separate models: one including facilitators and the other including barriers. All analyses were performed using SPSS v27 software.

3 Results

3.1 Descriptive analyses

Table 1 shows the levels of parental involvement in their children’s education among the participants, segmented by gender, educational level, country of origin, age, and time of residence in Chile. It is evident that women exhibited higher levels of involvement (75.2%), with the majority of parents having completed high school (49.3%). Venezuelans constituted the largest group across all levels of involvement (47.8%), followed by Peruvians (19.9%) and Colombians (13%). The average age of the parents remains consistent across categories, at approximately 33 years, with a mean residence time in Chile of approximately 5.04 years.

Chi-squared and ANOVA tests revealed that neither gender [$\chi^2(2) = 0.299$, $p = 0.861$] nor age [$F(2, 344) = 0.035$, $p < 0.966$; Eta-squared = 0.000] was related to parental involvement among the parents in the sample. Conversely, parental educational level [$\chi^2(4) = 29.66$, $p < 0.001$], in favor of the university level, and Venezuelan nationality [$\chi^2(6) = 16.25$, $p = 0.012$] were associated with higher levels of parental involvement. The time of residence in Chile was not significantly associated with parental involvement; however, there was a tendency in the results [$F(2, 344) = 2.888$, $p = 0.057$; Eta-squared = 0.017].

3.2 Main analyses

We conducted two multinomial logistic regression analyses to predict the parental involvement of immigrant families in early education based on the level of intercultural sensitivity (i.e., the

common predictor) and the possible factors that can be facilitators (i.e., Table 2) and barriers (i.e., Table 3) to parents’ participation. Parental involvement consisted of three categories of participation in their child’s educational process: almost never, frequently, and always (the reference category). Two models were executed, one with sociodemographic variables, intercultural sensitivity, and facilitators as predictors and another one with barriers as predictors. As can be seen in both models and for both contrasts, the parents’ levels of intercultural sensitivity were significant predictors of parental involvement.

In the first model (Table 2), the predictors examined whether intercultural sensitivity explained parental involvement in the presence of other predictors, such as structural factors (age, gender, country of origin, educational level, time in Chile, and the child’s early education level) and facilitators of parental participation in school activities (*a welcoming attitude on the part of the educators; respectful treatment by the educators; ensuring that the child feels integrated with the rest of the class; the educators’ efforts to understand families’ cultures, customs, and parenting styles; a good climate among parents; having other students from immigrant families at the school; and a curriculum that integrates cultural diversity*). This model with these variables accounted for more than 30% of the variability in parental involvement ($R^2_{\text{Nagelkerke}} = 0.322$).

For the contrast between “almost never” and “always,” it was shown that an increase in intercultural sensitivity was associated with 75% lower odds of parents almost never being involved in their children’s educational process compared to always being involved (OR = 0.250, 95% CI [0.109, 0.575], $p = 0.001$). For the facilitators, only one predictor was significant: the presence of other immigrant families in the center. Parents who selected this facilitator had 3.64 times higher odds of almost never being involved compared to being always involved (OR = 3.641, 95% CI [1.594, 8.317], $p = 0.002$). Additionally, having a child at a higher educational level (kindergarten) was linked to 62.1% lower odds of being almost never involved (OR = 0.379, 95% CI [0.182, 0.791], $p = 0.010$). Finally, parents with technical or professional education (vs. university level) had 5.16 times higher odds of almost never being involved in their children’s educational process (OR = 5.164, 95% CI [1.611, 16.547], $p = 0.006$).

For the contrast between “frequently” and “always,” intercultural sensitivity was again a significant predictor (OR = 0.465, 95% CI [0.235, 0.918], $p = 0.027$), which was associated with 53.5% lower odds of reporting frequent involvement instead of always. Additionally, the facilitator of a good climate among parents was associated with 63.1% lower odds of being frequently involved compared to always (OR = 0.369, 95% CI [0.171, 0.796], $p = 0.011$). As in the other contrast, the choice of facilitator related to the presence of other immigrant families in the school was associated with 3.59 times higher odds of being frequently involved (OR = 3.594, 95% CI [1.769, 7.304], $p < 0.001$). Also, as in the previous contrast, parents with technical or professional education showed lower levels of participation, with 4.39 times higher odds of reporting being frequently involved instead of always (OR = 4.392, 95% CI [1.723, 11.195], $p = 0.002$).

In summary, for this model, parents with higher levels of intercultural sensitivity are more likely to always participate, thereby reducing the odds of participating almost never or only frequently. Other significant predictors include having a child at higher levels of early education. As facilitators, parents who indicated having a good climate among parents were more likely to be always involved than to participate only frequently. Conversely, parents who chose to facilitate

TABLE 2 Involvement of immigrant families in the educational process of their children (facilitator model).

Predictor	<i>B</i>	<i>SE</i>	<i>p</i>	OR [95% CI]
Contrast 2: Almost never vs. Always				
Age	0.041	0.029	0.160	1.042 [0.984, 1.103]
Gender ¹	−0.070	0.393	0.859	0.933 [0.432, 2.014]
Country of origen ²				
Venezuela	−0.780	0.681	0.253	0.459 [0.121, 1.744]
Peru	−0.434	0.648	0.503	0.648 [0.182, 2.306]
Colombia	−0.673	0.789	0.394	0.510 [0.109, 2.395]
Educational level ³				
High school	0.341	0.593	0.565	1.407 [0.440, 4.501]
Technical/professional	1.642	0.594	0.006	5.164 [1.611, 16.547]
Time in Chile ⁴				
0–2 years	0.843	0.621	0.175	2.323 [0.688, 7.841]
2–5 years	0.068	0.600	0.910	1.070 [0.330, 3.469]
5–7 years	0.626	0.614	0.308	1.870 [0.561, 6.233]
School level (child) ⁵	−0.970	0.376	0.010	0.379 [0.182, 0.791]
Intercultural Sensitivity	−1.386	0.424	0.001	0.250 [0.109, 0.575]
Facilitator 1	0.426	0.571	0.456	1.531 [0.499, 4.691]
Facilitator 2	0.443	0.461	0.336	1.558 [0.631, 3.845]
Facilitator 3	0.237	0.472	0.615	1.268 [0.502, 3.200]
Facilitator 4	−0.453	0.415	0.275	0.636 [0.282, 1.435]
Facilitator 5	−0.580	0.445	0.193	0.560 [0.234, 1.340]
Facilitator 6	1.292	0.422	0.002	3.641 [1.594, 8.317]
Facilitator 7	0.412	0.455	0.365	1.509 [0.619, 3.679]
Contrast 2: Frequently vs. Always				
Age	−0.002	0.025	0.940	0.998 [0.949, 1.049]
Gender ¹	−0.218	0.341	0.524	0.804 [0.412, 1.571]
Country of origen ²				
Venezuela	0.321	0.630	0.610	1.379 [0.401, 4.741]
Peru	0.169	0.622	0.785	1.185 [0.350, 4.007]
Colombia	0.868	0.676	0.199	2.382 [0.634, 8.958]
Educational level ³				
High school	0.216	0.465	0.643	1.241 [0.499, 3.086]
Technical/professional	1.480	0.477	0.002	4.392 [1.723, 11.195]
Time in Chile ⁴				
0–2 years	−0.268	0.507	0.597	0.765 [0.283, 2.067]
2–5 years	−0.168	0.463	0.717	0.845 [0.341, 2.094]
5–7 years	−0.002	0.476	0.996	0.998 [0.392, 2.538]
School level (child) ⁵	−0.471	0.307	0.125	0.624 [0.342, 1.139]
Intercultural Sensitivity	−0.766	0.347	0.027	0.465 [0.235, 0.918]
Facilitator 1	0.448	0.501	0.371	1.566 [0.587, 4.179]
Facilitator 2	−0.056	0.419	0.894	0.946 [0.416, 2.148]
Facilitator 3	0.265	0.416	0.524	1.303 [0.577, 2.944]
Facilitator 4	0.241	0.369	0.513	1.273 [0.618, 2.622]
Facilitator 5	−0.996	0.392	0.011	0.369 [0.171, 0.796]

(Continued)

TABLE 2 (Continued)

Predictor	B	SE	p	OR [95% CI]
Facilitator 6	1.279	0.362	0.000	3.594 [1.769, 7.304]
Facilitator 7	0.012	0.397	0.976	1.012 [0.465, 2.202]

B, SE, and OR [95% CI] indicate the regression coefficients, standard errors and the odds ratio with their 95% confidence intervals, respectively. ¹Gender is a categorical variable being 0 male and 1 female. ²Country of origin is a dummy comparison with a reference of being from Haiti. ³Educational level is a dummy comparison with a reference of having the highest level, that is university level. ⁴Time in Chile was transformed to quartiles (min = 0 and max = 16 years in Chile) being 2, 5 and 7 years of residence the percentiles 25, 50 and 75, respectively. 5, Pre-Kindergarten vs. Kindergarten. The facilitators were 1: A welcoming attitude on the part of the educators; 2: Respectful treatment by the educators; 3: That your child feels integrated with the rest of the class; 4: That the educators try to understand their culture, customs, parenting styles; 5: A good climate among parents; 6: That the school has other students from immigrant families; 7: That the school has a curriculum that integrates cultural diversity.

with more immigrant families at the center were associated with lower levels of participation, as were those with technical or professional education. This last variable emerged as the most important predictor of parental involvement in their children's educational processes. No significant associations were found for age, gender, or time residing in Chile in either contrast or for other facilitators.

In the second model (Table 3), the same variables were included; however, instead of facilitators, we introduced barriers to parental involvement as predictors: (*that their child feels rejected by peers; that they feel rejected by other parents; that they feel questioned by the teachers for being different from Chileans; that the school does not have a special approach for immigrant families; that they do not understand the Chilean educational system; that they have only been in Chile for a short time*). The variables introduced to the model accounted for more than 30% of the variability of parental involvement ($R^2_{\text{Nagelkerke}} = 0.311$).

In contrast to “almost never” and “always,” parents' levels of intercultural sensitivity also explain parental involvement in the children's educational process. Specifically, parents with lower intercultural sensitivity were significantly more likely to report lower levels of involvement, whereas parents with higher intercultural sensitivity were 70% more likely to report being *always* involved rather than *almost never* (OR = 0.300, 95% CI [0.131, 0.691], $p = 0.005$). Regarding barriers, parents who believed that the school lacked a special approach for immigrant families were 3.79 times more likely to report low involvement (OR = 3.796, 95% CI [1.642, 8.775], $p = 0.002$). As in the model for facilitators, parents with a technical or professional education had significantly higher odds of reporting *almost never* being involved in educational activities (OR = 5.058, 95% CI [1.580, 16.194], $p = 0.006$). Similarly, parents with children in higher school levels, such as kindergarten, had lower odds of reporting *almost never* being involved compared to parents with children in pre-kindergarten (OR = 0.399, 95% CI [0.193, 0.826], $p = 0.013$).

For the contrast between “frequently” and “always” regarding parental involvement, intercultural sensitivity again emerges as a significant predictor. Higher intercultural sensitivity is associated with 1.97 times lower odds of being *frequently* involved compared to being *always involved* (OR = 0.507, 95% CI [0.261, 0.985], $p = 0.045$). In all circumstances of parental involvement, higher intercultural sensitivity in parents predicts greater odds of always participating in their children's educational process. In this contrast, the barrier of being in Chile for a shorter time proves significant, with 2.48 times higher odds of reporting *frequent* involvement compared to being *always involved* (OR = 2.487, 95% CI [1.243, 4.978], $p = 0.010$). As in the previous contrast, higher educational levels of parents are significantly associated with greater odds of reporting only *frequent* involvement (OR = 4.756, 95% CI [1.877, 12.053], $p = 0.001$).

In summary, for the model with the barriers, parents with higher levels of intercultural sensitivity showed higher levels of involvement in their children's educational processes in both contrasts. Similar to the other model, parents with children at a higher educational level also have greater odds of consistently participating. On the other hand, viewing the center's lack of a special approach for immigrant families as a barrier discourages parental participation, nearly to the extent of never versus always. Furthermore, parents who identify being in Chile for a short time as a barrier tend to participate more frequently than those who participate consistently. Additionally, the most significant predictor appears to be the technical/professional educational level; these parents tend to participate less often than those with a university education.

Predictors such as age, gender, the time residing in Chile, and other barriers did not show significant associations in either contrast.

4 Discussion

This study aimed to explore the relationship between intercultural sensitivity and immigrant parents' involvement in their children's early education. Our results emphasize the significant role of parents' intercultural communication skills in enhancing their active participation in children's education, encompassing both school and home tasks. Additionally, the lack of specific approaches for immigrant families, combined with their shorter length of stay in Chile and the high presence of immigrant families in schools, poses significant barriers to the participants' involvement. Moreover, the perception of a positive climate among parents appears to facilitate their participation.

Our central hypothesis was that parental involvement would be explained by their levels of intercultural sensitivity (H1). Furthermore, this variable would have greater explanatory potential than the educational level of the parents (H2.1) and their length of residence in Chile (H2.2). Relevant sociodemographic variables, including gender, age, educational level, nationality, length of residence in Chile, and the grade in which their children were enrolled, were considered. Additionally, factors that could facilitate or hinder parental participation were evaluated in separate models.

We performed two multinomial logistic regression models for parental involvement, contrasting being *almost never* (1) or *frequently* (2) involved against *always* (3). Both models considered the common variables of intercultural sensitivity and sociodemographic factors. The first model included facilitators as predicting variables, while the second model included barriers. Both models confirmed the first hypothesis, showing that intercultural sensitivity was a significant predictor of higher levels of parental involvement in their children's educational processes.

TABLE 3 Involvement of immigrant families in the educational process of their children (barrier model).

Predictor	<i>B</i>	<i>SE</i>	<i>p</i>	OR [95% CI]
Contrast 1: Almost never vs. Always				
Age	0.042	0.029	0.152	1.043 [0.985, 1.104]
Gender ¹	−0.041	0.390	0.916	0.960 [0.447, 2.059]
Country of origen ²				
Venezuela	−1.047	0.661	0.113	0.351 [0.096, 1.281]
Peru	−0.716	0.640	0.264	0.489 [0.139, 1.715]
Colombia	−0.761	0.775	0.326	0.467 [0.102, 2.133]
Educational level ³				
High school	0.537	0.591	0.364	1.710 [0.537, 5.447]
Technical/professional	1.621	0.594	0.006	5.058 [1.580, 16.194]
Time in Chile ⁴				
0–2 years	0.983	0.621	0.113	2.673 [0.792, 9.022]
2–5 years	0.189	0.586	0.747	1.208 [0.383, 3.805]
5–7 years	0.611	0.601	0.309	1.843 [0.567, 5.990]
School level (child) ⁵	−0.919	0.371	0.013	0.399 [0.193, 0.826]
Intercultural Sensitivity	−1.203	0.425	0.005	0.300 [0.131, 0.691]
Barrier 1	−0.573	0.621	0.356	0.564 [0.167, 1.904]
Barrier 2	0.192	0.421	0.649	1.211 [0.531, 2.764]
Barrier 3	−0.124	0.462	0.788	0.883 [0.357, 2.185]
Barrier 4	1.334	0.427	0.002	3.796 [1.642, 8.775]
Barrier 5	−0.622	0.442	0.160	0.537 [0.226, 1.278]
Barrier 6	0.634	0.417	0.128	1.886 [0.833, 4.270]
Contrast 2: Frequently vs. Always				
Age	0.005	0.024	0.841	1.005 [0.958, 1.054]
Gender ¹	−0.125	0.330	0.705	0.883 [0.462, 1.685]
Country of origen ²				
Venezuela	0.208	0.623	0.738	1.232 [0.364, 4.174]
Peru	−0.051	0.614	0.934	0.951 [0.285, 3.167]
Colombia	0.723	0.676	0.285	2.060 [0.548, 7.747]
Educational level ³				
High school	0.435	0.463	0.347	1.545 [0.624, 3.825]
Technical/professional	1.559	0.474	0.001	4.756 [1.877, 12.053]
Time in Chile ⁴				
0–2 years	−0.064	0.497	0.897	0.938 [0.354, 2.483]
2–5 years	−0.017	0.445	0.970	0.983 [0.411, 2.351]
5–7 years	−0.035	0.469	0.941	0.966 [0.385, 2.424]
School level (child) ⁵	−0.459	0.303	0.130	0.632 [0.349, 1.144]
Intercultural Sensitivity	−0.679	0.339	0.045	0.507 [0.261, 0.985]
Barrier 1	−0.334	0.516	0.517	0.716 [0.260, 1.969]
Barrier 2	0.215	0.365	0.556	1.239 [0.606, 2.533]
Barrier 3	0.198	0.389	0.611	1.219 [0.569, 2.611]
Barrier 4	0.382	0.355	0.282	1.465 [0.731, 2.939]
Barrier 5	−0.709	0.382	0.063	0.492 [0.233, 1.040]
Barrier 6	0.911	0.354	0.010	2.487 [1.243, 4.978]

B, *SE*, and *OR* [95% *CI*] indicate the regression coefficients, standard errors and the odds ratio with their 95% confidence intervals, respectively. ¹Gender is a categorical variable being 0 male and 1 female. ²Country of origin is a dummy comparison with a reference of being from Haiti. ³Educational level is a dummy comparison with a reference of having the highest level, that is university level. ⁴Time in Chile was transformed to quartiles (min = 0 and max = 16 years in Chile) being 2, 5, and 7 years of residence the percentiles 25, 50, and 75, respectively. ⁵Pre-Kindergarten vs. Kindergarten. The barriers were 1: That their child feels rejected by peers; 2: That they feel rejected by other parents; 3: That they feel questioned by the teachers for being different from Chileans; 4: The school does not have a special approach for immigrant families; 5: They do not understand the Chilean educational system; 6: That they have only been in Chile for a short time.

In the first model, which included facilitators, more than 30% of the variability in parental involvement was explained. For both contrasts [1 vs. 3; 2 vs. 3], parents' levels of intercultural sensitivity were significant predictors of parental involvement. Specifically, higher levels of intercultural sensitivity increase the likelihood of greater involvement in children's educational processes. This supports other studies that showed that high participation in the education of immigrant parents is related to the intercultural sensitivity of different members of the educational community (Cala et al., 2018; Massing et al., 2013; Mera-Lemp et al., 2024, 2025).

Particularly, these results suggest that participants' ability to recognize cultural differences, maintain a respectful attitude toward them, and adjust their own cultural frames and behaviors through intercultural interactions leads to enjoyment in these encounters and confidence in communicating in intercultural settings. This appears to motivate parents to engage in school activities and participate in their children's educational processes. Therefore, immigrant parents can also benefit from developing their communication skills in relationships with other cultures, particularly with the Chilean culture, and fostering their cultural sensitivity through interactions at early educational establishments.

Additionally, compared to parents with the highest level of education (i.e., university level), those with technical or professional levels were five times more likely to be uninvolved in their children's education. Studies on minority group parents' school involvement have systematically shown that their educational backgrounds play a key role in their participation in their children's schooling (Calzada et al., 2015; Friedman et al., 2006; González-Falcón et al., 2022). Parents with high educational levels tend to perceive themselves as more confident and qualified to be involved in their children's education. Similarly, their cultural capital tends to align more coherently with the content that schools transmit through education (Antony-Newman, 2018; Calzada et al., 2015; Bourdieu and Passeron, 1990; Epstein, 2018; Hornby and Lafaele, 2011).

Finally, regarding the facilitators in the model, the presence of other immigrant families in the school was associated with lower parental involvement. While this finding requires further research, one possible explanation is that centers with a high presence of immigrant families may face greater challenges in managing cultural diversity (Calzada et al., 2015; Glock et al., 2019; Gutentag et al., 2018), which could contribute to parents' disengagement from participation (Kalmijn, 2024). This aligns with studies showing that immigrant families often face challenges in balancing the expectations that early education in the host society places on them with their own cultural values and traditions (Yamamoto and Li, 2012; Kong et al., 2024; Subramaniam, 2011). Another possible explanation is that in the Chilean context, studies conducted with Latin American immigrants have shown a high interest in integrating into the local society while maintaining their cultural identities but, at the same time, adopting some aspects of the host culture (Mera-Lemp et al., 2021; Sirlópi and Renger, 2020). Thus, participating in school communities composed mainly of other immigrants could be less attractive and discourage them from participating.

Relatedly, another significant facilitator was maintaining a positive climate among parents, which increased the probability of frequent to constant participation by 39%. Parents' perceptions of the school climate could lead them to commit extensively to their children's

education by providing positive emotional experiences and opportunities for building social relationships (Murray et al., 2020). Together, these facilitators underscore the importance of immigrant parents integrating as equals with all parents in the class to enhance their likelihood of consistently being involved in their children's educational processes (Calzada et al., 2015; Baker et al., 2016; Khalfaoui et al., 2020; Reynolds et al., 2015; Sohn and Wang, 2006).

The analysis that introduced the barriers instead of facilitators showed similar results. Again, parents' levels of intercultural sensitivity were significant predictors of parental involvement in the educational processes in early education. In detail, greater levels of this variable increased parental involvement by 70% from *never* to *always* and approximately 50% from *frequently* to *always*. Considering the reported barriers to participation, a barrier that appeared significant when there was already parental involvement (i.e., the contrast of frequently vs. always) was that being in Chile for a shorter time decreased the parents' involvement. As a hypothesis, this could be due to the fact that parents who have lived in the country for a shorter time may have a more limited understanding of the educational system and the host culture, which could discourage them from engaging in educational processes (Antony-Newman, 2018). It is worth noting, however, that among the sociodemographic variables assessed, the length of stay in the country was not significant in the models. Therefore, it is possible that this aspect is perceived as a barrier but is not actually one for those who are involved.

Another significant barrier to predicting parental involvement was that the educational institution did not have a specific approach for immigrant families, which reduced parental involvement by 3.7 times. Clearly, this issue is related to the presence of other students from immigrant families and a positive climate among parents. Altogether, this calls for an early education context that intentionally welcomes immigrant families. This is also relevant for future learning outcomes, as the meta-analysis by Ma et al. (2016) demonstrated. The relationship between parental involvement in early education and learning outcomes was strong (0.509) but considerably weaker among minority children. The study suggests that barriers such as cultural differences, language, and socioeconomic factors might diminish the impact of parental involvement. All of this can be addressed by developing intercultural sensitivity within the educational community, as this can effectively enhance parents' participation, while structural variables are difficult to change.

Although intercultural sensitivity has always been important, in both comparisons, parents' educational level had the strongest influence. In the case of frequent versus always, intercultural sensitivity was the weakest variable predicting the levels of parental involvement.

This study has several limitations that should be considered. First, it employed a non-random, cross-sectional design, which limits the ability to capture the dynamic nature of parental involvement over time. Parents' participation in their children's educational processes evolves as they gain familiarity with the teachers, other parents, the school environment, and the Chilean educational system. Thus, future studies could use a longitudinal approach to provide deeper insights into these changes. Second, the study excluded immigrant parents who do not speak Spanish (e.g., Haitian parents), a group likely to experience greater cultural differences and face one of the most significant barriers to school participation: language comprehension. Future research should address these gaps to gain a

more comprehensive understanding of how the barriers associated with this limitation relate to parental involvement in their children's early education educational processes. A third limitation of this study is that intercultural sensitivity was analyzed using only the total score without examining its different dimensions. Exploring these dimensions separately could provide a better understanding of how specific aspects of intercultural sensitivity—such as interaction engagement, respect for cultural differences, or interaction confidence—influence immigrant parents' participation in their children's educational processes.

Despite these limitations, our findings suggest that intercultural sensitivity can be important in increasing parental involvement in early education. Our results emphasize the importance of educational contexts that acknowledge the differences within immigrant families and their willingness to engage in respectful and interested communication, thereby promoting positive school climates. Furthermore, given that this study suggests that the management of cultural diversity by the centers could be an important asset in encouraging parents to actively participate, it will be interesting to explore the possible role of cultural diversity in the school climate on their levels of involvement.

Finally, our results suggest that educational policies should consider the development of intercultural sensitivity as an important asset for immigrant parents' involvement. This could be achieved by including training in this capability in early education teachers' curricula. Also, the creation of interventions aimed at increasing parents' intercultural competencies could have an important impact, including on those who belong to the receiving country. This can improve intergroup relationships in order to promote the value of diversity within educational communities, helping overcome the actual difficulties.

Even though there is a lack of evidence regarding intervention programs to improve these capacities in immigrant parents, it is important to consider the role of the construction and implementation of reception protocols for immigrant families. These protocols could include information about the center's functioning, the norms, and the expectations for parents' roles. Similarly, they should consider cultural cues to understand interactions among parents and educators and guide them on how to obtain support from the school staff, including explicit invitations to participate and propose ideas to better understand their own cultures. However, further research is needed to design and develop these types of interventions, including, for example, qualitative studies to deeply understand immigrant parents' participation in early education.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by the Research Ethics Committee of the Universidad Alberto Hurtado. The studies were conducted in accordance with local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

MB: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. FG-S: Project administration, Writing – original draft, Writing – review & editing. MM-L: Conceptualization, Investigation, Writing – original draft, Writing – review & editing. JP: Methodology, Writing – original draft, Writing – review & editing. DF: Writing – original draft, Writing – review & editing. GM-Z: Investigation, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The handling editor ER declared a past collaboration with the author MM-L.

Generative AI statement

The author(s) declare that no Gen AI was used in the creation of this manuscript.

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Grit and perceived teacher support associations with Chinese language achievement: the mediating role of emotion in Thai high school Chinese classrooms

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Introduction: Chinese language learning is gaining considerable attention from learners worldwide, leading many countries, including Thailand, to make it a mandatory subject in primary and secondary education. However, many Chinese learners lack interest in learning Chinese, resulting in inadequate Chinese language proficiency. Chinese language learners' grit and emotional commitment to Chinese language learning are key factors in determining their language learning success, and the support of Chinese as a Foreign Language teachers is also crucial in this process. Thus, this cross-sectional study investigates the associations of students' grit and perceived teacher support with their Chinese language achievement while considering the potential mediating role of emotions (enjoyment, anxiety, and boredom).

Methods: The study included 665 high school students from two public and three private schools in Bangkok. A questionnaire and an HSK exam paper were the instruments used in this study. Partial least squares structural equation modeling was applied to analyze the data.

Results: The findings indicated that perceived teacher support, grit, and three emotional factors were each significantly associated with Chinese language achievement. While all three emotions mediated the relationship between perceived teacher support and Chinese language achievement, only foreign language learning enjoyment exerted a mediating role in the association between perseverance and Chinese language achievement.

Discussion: With insights for Chinese language educators and educational administrators, this paper highlights the importance of fostering learning perseverance, supportive learning environments, and meeting students' emotional needs to improve Chinese language learning achievement.

KEYWORDS

anxiety, boredom, Chinese language learning, enjoyment, grit, perceived teacher support

1 Introduction

In recent years, the number of Chinese as a foreign language (CFL) learners has increased by 20% per year, and there have been more than 25 million CFL learners worldwide (Zhou, 2023). Many countries have officially incorporated Chinese language courses into school education, such as Australia, New Zealand, Singapore, and Thailand (Duangmanee and Waluyo, 2023). Thailand has the largest number of CFL learners among less-developed countries (Xu et al., 2022). Owing to Thailand's close economic, cultural, and political

connections with China, a pressing demand exists for qualified professionals proficient in Mandarin and Thai to foster comprehensive cooperation between the two nations (Xu et al., 2022). In collaboration with China, the Royal Thai Government has established 16 Confucius Institutes, underscoring its commitment to advancing Chinese language education and fostering cultural exchanges between the two nations (Cao and Tananuraksakul, 2023). The Thai Ministry of Education has listed Chinese as a highly recognized foreign language and is dedicated to its promotion throughout all educational levels in Thailand (Ewe and Min, 2021).

Chinese language learning is mandatory in many Thai schools for students' K12 education, with most Thai students beginning their structured Chinese education as early as primary school grade one (Duangmanee and Waluyo, 2023). According to Ning and Tananuraksakul (2024), over 2,000 Thai primary and secondary schools offer Chinese language courses, with student enrollment exceeding 1 million. For Thai high school students, Chinese has become a critical component of university entrance exams and a key determinant for accessing higher education opportunities (Zhang and Chinokul, 2023). Since 1998, the Chinese language has been officially integrated into Thailand's high school curriculum, becoming a foreign subject in Thai university entrance exams (Ewe and Min, 2021). A considerable number of Thai high school students, especially those with relatively lower English proficiency, often invest more effort in learning Chinese, thereby gaining a competitive advantage in the Thai university entrance examinations (Zhang and Chinokul, 2023).

HSK (Hanyu Shuiping Kaoshi—Chinese Proficiency Test) is one of the most widespread and largest standardized examinations to test the Chinese language proficiency of non-native speakers of Chinese, which has been flourishing worldwide and is an important part of the development of globalization of Chinese language learning (Sun, 2023). The HSK is a standardized instrument for evaluating the language competency of CFL learners, effectively reflecting their proficiency in listening, speaking, reading, and writing in Chinese (Liu, 2022). The Chinese government annually invites Thai students with an HSK level 4 or above to study at leading universities in China, offering full scholarship support, which is undeniably a significant attraction for many Thai high school students (Peng et al., 2021). As a result of this policy, the number of Thai overseas students enrolled in Chinese universities has escalated from 667 in 2000 to 28,608 in 2018, with consistent year-on-year growth in recent years (Liang and Li, 2023).

Foreign language learning is a process in which students must interact dynamically with different people, among which interaction with teachers is particularly crucial (Liu and Li, 2023; Ma et al., 2022). Perceived Teacher Support (PTS) refers to learners' subjective perceptions of the various kinds of support provided by teachers in the language learning process. Support from teachers can create a safe and friendly foreign language learning environment for language learners and guide them in generating positive learning emotions, which in turn effectively enhances their language proficiency (Sadoughi and Hejazi, 2022). Most Thai CFL teachers are Chinese, and some of them usually encounter problems such as insufficient language teaching experience, lack of understanding of the local culture, and difficulties in Thai language communication (Duangmanee and Waluyo, 2023; Ewe and Min, 2021). As a result of these problems, many Thai students feel that the support and assistance provided by their CFL teachers is insufficient, dampening their enthusiasm for learning Chinese and hindering the development

of their Chinese proficiency (Duangmanee and Waluyo, 2024). Therefore, perceived teacher support (PTS) was included in this study as one of the factors affecting Thai students' Chinese language achievement (CLA).

In language learning, grit (GR) is learners' sustained passion for and perseverance toward long-term language goals (Teimouri et al., 2022). GR is characterized by steadfast commitment that enables language learners to overcome setbacks and maintain progress despite encountering setbacks or plateaus (Heydarnejad et al., 2022). Chinese is an extremely challenging language for non-native Chinese speakers, and only those who exhibit unwavering perseverance in their learning can master it through continuous practice and accumulation (Chai and Bao, 2023). Thai students must exert considerable effort to overcome the language barrier while learning Chinese, owing to the phonetic tonal differences, the memorization requirements of intricate character structures and stroke rules, and the grammatical disparities between Chinese and Thai (Ning and Tananuraksakul, 2024). Even at the university level, the Chinese proficiency of many Thai students remains low, with one of the most significant reasons being their loss of grit (GR) in Chinese learning (Cao and Tananuraksakul, 2023). Therefore, GR is also considered a critical factor in this study.

Emotions are indispensable in language learning (Dornyei and Ryan, 2015). Li and Wei (2023) indicated that three emotions, foreign language enjoyment (FLE), foreign language anxiety (FLA), and foreign language boredom (FLB), significantly influence language learners' language achievement, particularly FLE, which has great potential to enhance language proficiency. FLE is defined as a positive emotion directly associated with learning activities, denoting learners' active involvement and favorable experiences with the language itself. As a Buddhist-majority nation, Thai students are exposed to Buddhist cultural concepts from an early age, which profoundly shapes the emotional aspects of their learning processes (Yuenyong and Yuenyong, 2012). The Buddhist cultural concept of "sukha" (true happiness and well-being)—referring to the state of happiness achieved through the elimination of suffering and the pursuit of inner peace and social harmony—profoundly influences Thai education, thus shaping students' perception that learning should be an enjoyable and pleasurable experience (Dellios, 2025). Influenced by the cultural concept of "sukha," Thai students attach significant importance to FLE in language learning, as they posit that language acquisition should inherently be a pleasurable process (Yang and Chanyoo, 2022). Cao and Tananuraksakul (2023) indicated that Thai students are more inclined toward learning Chinese due to their enjoyment of the Chinese classroom atmosphere. Enhancing the FLE is posited to foster sustained motivational engagement among Thai students and concurrently contribute to improving language learning outcomes (Toomnan, 2024). As such, FLE was included in this study as a positive emotion.

FLA refers to "a distinctive complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (Horwitz et al., 1986). FLA is a predominant negative emotion in foreign language learning and a crucial determinant of learning outcomes and classroom performance (Shen, 2021). It has remained the most extensively discussed emotional variable in foreign language learning research (Liu et al., 2025). Sukjairungwattana (2023) pointed out that some Thai students have negative emotions due to the monotonous learning environment and difficulties in the Chinese language, which leads to their loss of interest and motivation in Chinese learning.

Thai students often experience FLA when studying Chinese, which is closely linked to the significant challenges posed by the Chinese language and their language learning environment (Ning and Tananuraksakul, 2024). However, in Thai Buddhist cultural contexts, students often attribute academic challenges, such as difficulties in learning Chinese, to the “*kamma*” (the law of cause and effect), interpreting these struggles as consequences of past-life misdeeds, which can foster self-perceptions of inherent unsuitability for learning and reducing their anxiety (Dhammasami, 2018). Furthermore, the Thai cultural concept of “*sati*” (mindfulness) refers to the focused observation of present-moment physical and mental states, through which Thai students, starting from childhood, are trained in Buddhist meditation practices to cultivate the ability to maintain equanimity and thereby better manage stress (Fry, 2018). Based on Xu et al. (2022), the Buddhist culture in Thailand, together with its emphasis on pleasure and relaxation, can shape Thai students’ perceptions of anxiety and their ways of coping with anxiety, thus impacting their Chinese learning achievement (CLA).

Boredom is defined as the aversive experience of having an unfulfilled desire to be engaged in a satisfying activity (Fahlman et al., 2013), and it has garnered significant attention in foreign language studies in recent years (Li et al., 2023). FLB is also one of the common negative emotions among Thai students in Chinese language learning. The Buddhist concept of “*Metta*” (loving-kindness) denotes a cultivated mental state of benevolence, compassion, and empathy for everyone cultivated through a systematic meditation practice regularly undertaken by Thai students (Tongsupachok et al., 2024). Profoundly influenced by “*Metta*,” Thai students tend to remain reticent rather than articulate constructive feedback to their teachers in tedious classrooms, driven by their cultural emphasis on deference to authority and avoidance of interpersonal conflict (Nakamura et al., 2021; Tongsupachok et al., 2024). However, this well-intentioned benevolence results in learning contents and tasks assigned by teachers failing to align with students’ expectations, preferences, and needs, thereby leading to the gradual accumulation of FLB (Nakamura et al., 2021). Factors contributing to FLB in the Chinese language classroom include unidimensional curriculum design and teaching strategies, excessive complexity of Chinese language content, and insufficient Chinese communication opportunities (Chen et al., 2024). Nakamura et al. (2021) posited that FLB could lead to numerous negative consequences on Thai students’ language learning, such as impeding their learning engagement, diminishing their learning interest, and eventually causing a decline in their language achievement. It is also necessary to study the influences of the two negative emotions, FLA and FLB, on Thai students’ Chinese language learning within the specific context of Thailand.

Research on foreign language learning is usually more focused on English as a Foreign Language (EFL), while research on CFL remains insufficient (Liu and Rao, 2024). While Chinese language education has gained significant traction in Thailand with a substantial learner population (Xu et al., 2022), existing research primarily focuses on investigating the current situation and recommending pedagogical techniques (Cao and Tananuraksakul, 2023; Duangmanee and Waluyo, 2023), with limited empirical exploration of the relationship between language achievement and psychological factors. This study investigates the association of students’ GR and PTS with their CLA in Thai high school Chinese language classrooms, considering the mediating role of emotional factors (FLE, FLA, and FLB).

2 Literature review

2.1 Perceived teacher support (PTS)

Self-determination theory (SDT) and the social support model provide contrasting definitions of teacher support (TS). Self-determination theory defines TS as the teacher’s responsibility to promote students’ intrinsic motivation and learning engagement by satisfying their autonomy, competence, and relatedness needs (Deci and Ryan, 2000). Autonomy pertains to learners’ inclination for choices and making decisions in their learning progress; competence refers to their desire to feel effective in accomplishing tasks; and relatedness underscores the significance of feeling connected and supported inside the educational setting (Deci and Ryan, 2000). In the social support model, TS is defined as a multidimensional construct comprising four components: informational support, instrumental support, emotional support, and appraisal support, which teachers systematically provide to enhance students’ academic and personal development (Tardy, 1985). Informational support refers to the provision of domain-specific advice; instrumental support refers to the allocation of tangible resources such as financial assistance and time; emotional support involves the demonstration of affection, trust, and empathy; and appraisal support is the delivery of timely feedback on student performance (Malecki and Elliott, 1999).

Self-determination theory emphasizes psychological needs for motivating autonomy, competence, and relatedness, whereas the social support model directs more detailed attention to the specific forms of support teachers offer students in real-world instructional contexts (Deci and Ryan, 2000; Malecki and Demaray, 2002). Thai CFL learners, especially non-Chinese major students, often engage passively in Chinese language learning, and their interactions with Chinese teachers are mostly confined to the classroom (Srisinthon, 2024). As a result, Thai students particularly value the instructional resources and information teachers provide (Kaur et al., 2015). This makes the social support model especially relevant for capturing the specific types of support observed in actual teaching contexts. “*Kreng Jai*” (deferential harmony), a deeply rooted Thai cultural norm, reflects the tendency to restrain personal desires or opinions out of respect for others and a desire to preserve social harmony (Areemit et al., 2021). Influenced by “*Kreng Jai*,” Thai students consider teachers as authorities and paternal figures. They perceive behaviors that exhibit individual autonomy, such as independently selecting learning content, as challenging teachers’ authority and potentially harmful to the teacher-student relationship. This perspective regards teachers as ‘knowledge providers,’ resulting in Thai students seeing TS just as practical assistance, such as instructional feedback and resource provision (Kaur et al., 2015). Therefore, this study adopts the social support model’s definition of TS, defining PTS as Thai students’ perceptions of their Chinese teachers’ emotional, instrumental, informational, and appraisal support throughout their Chinese learning. Self-determination theory posits that teachers’ emotional and cognitive support can fulfill students’ needs, thereby enhancing students’ emotional experiences in learning and promoting the improvement of academic performance (Zhang and Hu, 2025). According to Cohen and Wills (1985), teacher support fosters a safe, encouraging environment that increases positive emotions, decreases negative emotions, and accelerates learning progress (Huang et al., 2024; Zhao and Yang, 2022).

While such findings are compelling, they mainly originate from EFL research contexts. Hejazi and Sadoughi (2023) discovered that TS might significantly decrease FLA and enhance English competence among Iranian EFL learners. Nonetheless, their findings may not be entirely applicable to the CFL context in Thailand, where students often display passivity driven by “Kreng Jai.” Tao et al. (2022) meta-analysis showed that PTS was positively and significantly associated with language learning achievement, especially for high school students facing pressure from higher education pursuits or employment prospects. Although this study incorporated data from a wide range of foreign language learning contexts, it still focused mainly on EFL scenarios. Given CFLs unique challenges in phonological systems, Chinese character memorization, and other domains, the applicability of existing conclusions to Thai CFL classrooms requires further validation.

Piechurska-Kuciel (2011) indicated a significant negative correlation between PTS and FLA among Polish secondary school EFL learners. Liu et al. (2023) study of Chinese high school EFL learners found that PTS was negatively and significantly associated with FLA. Zhao and Yang (2022) found that PTS was significantly and positively associated with FLE and negatively with FLB among Chinese high school EFL learners. Wu et al. (2023) examined Chinese university EFL learners and discovered that PTS positively correlated with FLE and was significantly and negatively associated with FLB. However, these aforementioned studies were all conducted in EFL contexts and culturally distinct educational settings (European and Chinese), and it is important to note that learners in these studies typically engaged in voluntary English learning. Conversely, although Thai students need to study Chinese from an early age, they often engage in a more passive learning approach owing to the design of the Chinese curriculum and the impact of Thai culture. These findings, though insightful, may not be directly transferable to the Thai CFL context, where cultural and curricular factors differ considerably. Consequently, an empirical study is required to re-investigate the association of PTS with language learning emotions within Thai CFL contexts.

Research on the impact of PTS on learners’ language learning emotions and achievement in CFL settings is still relatively scarce and needs further empirical evidence. Du et al. (2017) found that TS promotes positive emotions in Danish beginner CFL learners, thereby increasing their motivation and CLA. Instead of using a scale to measure the TS, Du et al.’s (2017) study examined various teacher identities, teaching styles, and attitudes to gauge their relationship with Chinese learning. Bao et al. (2021) found that the PTS of Greek CFL learners effectively promoted trust between teachers and students, greatly increasing learners’ confidence and motivation, which in turn met their emotional needs. This study employed a single-case research design involving interviews with a CFL teacher participating in the “Sino-Greece Online Chinese Language Classrooms” project, which differs from the present empirical study based on scales and models. Zhou (2023) study indicates that when CFL teachers provide support such as effective error correction, positive interaction, and timely guidance, it can significantly enhance the motivation and willingness to communicate. These findings were based on a qualitative study of six Scottish CFL learners and did not explore the relationship between teacher support and CLA. Quantitative research exploring the relationship between PTS and CLA in CFL contexts remains

underexplored, and this study aims to address this gap in the literature.

Most previous studies have focused on European learners, whose motivation, cultural values, and language environments significantly differ from those of Thai high school students. Learning Chinese poses significant challenges for most Thai CFL learners, whether because of the distinct tonal pronunciation and norms compared to the Thai language or the complexity of writing and memorizing Chinese characters, which can be considerably more difficult than the alphabet (Ning and Tananuraksakul, 2024). The concept of “Kreng Jai” impacts the hierarchical relationships between teachers and students, leading to distinctive perceptions of PTS among Thai language learners in contrast to those from other cultural backgrounds (Areemit et al., 2021). For example, Thai students may perceive the teacher’s strictness as supporting or caring rather than pressure. Exploring the association of Thai CFL learners’ PTS with their foreign language learning emotion and CLA could benefit CFL teachers in understanding the crucial role of PTS in cross-cultural language instruction, hence enhancing instructional support techniques to elevate students’ learning experiences and outcomes. Based on previous research findings, this study proposes the following hypotheses.

H1: PTS is positively associated with CLA.

H1a: PTS is negatively associated with FLA.

H1b: PTS is negatively associated with FLB.

H1c: PTS is positively associated with FLE.

2.2 Grit (GR)

As a psychological trait, GR is influenced by the positive psychological turn and has gained prominence in applied linguistics research (Dewaele and Dewaele, 2017; Teimouri et al., 2022). GR is defined as perseverance and passion for long-term goals, comprising two core components: maintaining enthusiasm and interest in tasks and persistence toward long-term goals (Duckworth et al., 2007). GR has become an essential predictor of success in a variety of fields and has also been emphasized and explored by numerous L2 researchers (Wang, 2021). As a positive personality trait, GR in L2 encompasses persistence of effort (POE) and consistency of interest (COI) (Teimouri et al., 2022). GR is a crucial non-cognitive factor in language learning that not only forecasts learners’ language proficiency but also addresses numerous long-term challenges by maintaining learners’ interest and persistent effort (Alamer, 2021). GR in language learning is not a fixed trait, but a malleable mental construct, meaning learners can cultivate and reinforce it through intentional effort and strategic engagement (Khajavy et al., 2021; Tang et al., 2019). GR fosters persistent motivation among foreign language learners despite challenges, hence improving language proficiency (Paradowski and Jelińska, 2024). GR, an essential construct in positive psychology that emphasizes individual strengths over weaknesses, is a notable non-cognitive predictor of academic achievement (Vela et al., 2015). Drawing on broaden-and-build theory (Zhao and Wang, 2023a) stated that GR, as a positive personality attribute, influences language acquisition by affecting emotions, hence improving learners’

engagement and performance. According to the Conservation of Resources Theory (COR), resources are categorized into four types: personal resources, social resources, material resources, and energy resources (Hobfoll, 2011). GR in language learning is conceptualized as a personal resource comprising two core dimensions: POE and COI (Liu et al., 2025). These two dimensions are regarded as personal psychological resources that enable learners to manage pressure, maintain motivation, and thus enhance academic performance (Halbesleben et al., 2014).

Teimouri et al. (2022) investigated Persian native EFL learners and found that GR positively correlated with English learning achievement. Fathi and Hejazi (2024) discovered that GR was significantly and positively associated with English language proficiency among Iranian EFL learners. Both studies were carried out in EFL contexts and did not include the mediating role of emotions on the relationship between GR and language achievement. Moreover, influenced by “sati” (mindfulness), the development of GR and its impact on the language competency of Thai students may vary from the previous research. Thai students are skilled at improving their GR for language learning through Buddhist practices such as meditation. Considerable research has been undertaken to examine the impact of GR on emotions related to language acquisition. Khajavy and Aghaee (2024) found that GR was significantly and positively associated with FLE and negatively with FLA among Iranian EFL learners. Zhao and Wang (2023a) found that Chinese EFL learners’ GR was positively and significantly associated with FLE and negatively with FLB. Similarly, Bensalem et al. (2024) discovered that the GR of EFL university students in Saudi Arabia was significantly associated with their FLE and FLB. The aforementioned research did not concurrently examine the association of GR with the three emotions (FLA, FLB, and FLE) and language performance within a single model. Under the dual influences of the formidable challenges of Chinese language learning and Buddhist culture, the interacting dynamics relationship among Thai CFL learners’ GR and language learning emotions has not been comprehensively examined via an empirical study. However, such exploration is of great significance for revealing the interconnected relationship among culture, emotion, psychological traits, and language learning.

GR-related research in the CFL context remains in its infancy. Sun et al. (2024) discovered that the GR of young CFL learners in New Zealand was positively and significantly associated with their Chinese speaking proficiency. It is important to note that Sun et al.’s (2024) CLA may not exactly match the study’s findings because it is based on the self-assessed oral performance of CFL learners rather than standardized tests. Zhao et al. (2024) demonstrated that GR in Arab CFL learners was significantly associated with FLE but not FLA, with FLE as a mediator between GR and CLA. The findings of Zhao et al.’s (2024) study, which focused on online Chinese language instruction during the COVID-19 pandemic, may not be applicable to regular offline Chinese language instruction as well. Zhao and Wang (2024) found that perseverance of effort in GR significantly affected FLA and FLE but not FLB among CFL learners in mainland China, while consistency of interest in GR did not significantly affect any of these three emotions. All of the participants in Zhao and Wang’s (2024) study were CFL students studying in China, all of whom had a high level of Chinese language competency and rather better Chinese language learning environment than CFL students studying Chinese in other countries.

While previous studies have examined the impact of GR on language learning emotions (FLA, FLB, and FLE) and CLA within the context of CFL, there is a lack of relevant research about GR for Thai learners. The GR of Thai language learners is characterized by sustained perseverance, pleasure of the learning experience, proficient anxiety regulation, and distinct goal orientation, all of which are intricately connected to Thailand’s Buddhist cultural heritage (Freiermuth et al., 2021). Having been immersed in Buddhist culture from childhood, many Thai students extend the self-discipline fostered by Buddhist rituals, such as daily chanting, to their language learning, believing that hard work in the present will pay off in the future (Freiermuth et al., 2021). Thus, the researchers intended to illustrate the unique mechanisms of GR on emotions and language achievement in the context of Buddhist culture and to provide empirical evidence for cross-cultural Chinese language teaching. The following hypotheses were proposed in this study.

H2: GR is positively associated with CLA.

H2a: GR is negatively associated with FLA.

H2b: GR is negatively associated with FLB.

H2c: GR is positively associated with FLE.

2.3 Emotions

Foreign language learning emotions refer to the various emotional states and psychological reactions experienced by learners in the process of foreign language learning (Plonsky et al., 2022). Control-value theory (CVT) provides theoretical support for research on the impact of emotions in the learning process (Pekrun, 2000). According to Pekrun and Stephens (2010), CVT categorized emotions into activating emotions (e.g., enjoyment, pleasure, and anxiety) and deactivating emotions (e.g., boredom, disappointment, and relaxation). Pekrun and Stephens (2010) further argued that positive emotions can enhance learners’ attention as well as increase motivation and engagement, thereby improving learning achievement, while negative emotions may increase the consumption of cognitive resources, weaken motivation, and thus damage learning achievement. Additionally, the affective filter hypothesis posits that the emotional states of second-language learners can influence the processing efficiency of language input (Krashen, 1982). Positive emotions such as enjoyment diminish the “Affective Filter,” facilitating the absorption and internalization of language input, thereby improving language proficiency; in contrast, negative emotions such as anxiety and boredom strengthen this filter, hindering language acquisition (Zhou and Wang, 2024). The present study focuses on three types of foreign language learning emotions, among which the positive emotion is denoted as FLE, and the negative emotions are FLA and FLB.

2.3.1 Foreign language anxiety (FLA)

FLA refers to a unique psychological state of learners when learning a foreign language, including nervousness, tension, and fear, which can weaken learners’ confidence and motivation, ultimately failing language development (Horwitz, 2017). Unlike general anxiety, FLA is context-specific and is activated only in situations involving language learning

or use (Dewaele et al., 2023). FLA can be affected by learning environments and pedagogical methods, making its mitigation a critical goal for enhancing language learning efficacy (Yu, 2024). It can be seen that FLA is not only a psychological challenge but also a critical variable that influences the effectiveness of language teaching and learning. This study defines FLA as emotional experiences Thai students encounter when learning and speaking Chinese, such as tension and apprehension. In CVT, FLA is considered a “negative activating emotion.” CVT regards FLA as “an emotion connected to learning outcomes” and highlights its disruptive impact on cognitive processes (e.g., distraction, memory inhibition), which could reduce learning performance (Li and Xing, 2024). Liu et al. (2023) noted that personality traits akin to these GR may diminish the generation of negative emotions, such as FLA, by reinforcing a sense of control and value. Educators need to reduce FLA by fostering supportive classroom settings, alleviating assessment pressures, and increasing opportunities for interaction to enhance learning (Dewaele and Macintyre, 2014). COR theory views anxiety as an individual’s stress reaction to the perceived danger or actual deprivation of resources (Hobfoll, 2001). Based on COR theory, FLA refers to the stress experienced by language learners who perceive losing their resources due to insufficient competence, task difficulty, or social pressure. Language learners with adequate resources (e.g., high POE and COI) will transform this anxiety into learning motivation, while those with insufficient resources may experience a decline in performance (Liu et al., 2025).

FLA has garnered heightened interest from scholars during the last two decades. FLA-related studies have been widely undertaken with learners from diverse language backgrounds, proficiency levels, and learning stages. Horwitz (2017) reported that a moderate negative correlation between FLA and language success is prevalent across various languages, regions, and cultures. It is important to acknowledge that Horwitz’s (2017) study did not include any empirical research within the particular setting of CFL. Additionally, correlational research of this nature does not inherently establish that FLA significantly influences language learning achievement. Dewaele et al. (2023) reported that FLA of Moroccan EFL learners significantly affects foreign language achievement, with an impact value that exceeds FLB and FLE. Liu et al. (2025) found that the influences of FLA on language learning achievement are characterized by group-specificity. FLA significantly influenced language learning achievement in the “great effort and interest” profile, whereas no significant effects were observed in other profiles. Li and Wei (2023) discovered that FLA negatively impacted the English performance of EFL learners in rural China in the short term; however, this effect lessened with time. Similarly, Li and Xing (2024) indicated that a moderate level of FLA among Chinese secondary school EFL learners would significantly impact their English learning outcomes. As we can see, research on the influence of FLA on language learning achievements has been thoroughly undertaken within the EFL setting. Compared with English language learning, CFL learners may face unique anxiety due to language features such as Chinese characters and tones, owing to the inherent difficulties related to the Chinese language (Yao et al., 2022). Empirical research on FLA within the context of CFL is limited, and the influence of FLA on student achievement in this domain requires additional investigation.

Yao et al. (2022) conducted systematic review studies on FLA among CFL learners from 1999 to 2020, revealing a significant negative relationship between FLA and performance in Chinese language

achievement, particularly exam scores. Most of the studies included in Yao et al.’s (2022) systematic review focused primarily on correlation analyses between FLA and CLA in the context of CFL rather than unilaterally exploring the effects of FLA on CLA. Xu et al. (2022) found that FLA was generally high in Thai adult CFL learners and could significantly negatively affect their CLA. This study used the HSK mock exam to evaluate CLA, contrasting with Xu et al.’s (2022) research, which utilized a hybrid method of subjective self-assessment and vocabulary tests; such differences in measuring instruments may result in divergent research outcomes. Besides, it is noteworthy that in the study by Zhao et al. (2024) on Arab CFL learners, FLA could not influence CLA significantly. Nonetheless, Thai high school students who engage passively in compulsory Chinese courses may markedly differ from the population in Zhao et al.’s (2024) CFL research, which mainly included adult voluntary learners. This study contributes to uncovering challenges faced by Thai students, particularly non-Chinese-major learners without strong self-driven motivation, in the context of ongoing Chinese language education policy implementation. In Thailand’s specific educational context, the sources and mechanisms of FLA among Thai high school students may differ significantly from those of voluntary learners in previous studies and should be further examined. Therefore, the following hypotheses were proposed.

H3: FLA is negatively associated with CLA.

2.3.2 Foreign language boredom (FLB)

FLB is recognized as a negative emotion that learners experience in foreign language learning due to poor task design or lack of perceived task value (Li et al., 2023). FLB is closely associated with learner distraction, feelings of underchallenge, decreased motivation, and learning avoidance, all of which impede the development of learners’ language abilities (Li et al., 2024). FLB leads to dissatisfaction, lack of motivation, and attention deficit among foreign language learners, affecting their learning outcomes (Ekatushabe et al., 2021). This research defines FLB as an emotional condition in which Thai students experience boredom with Chinese language learning, resulting in a diminished motivation to engage in the Chinese language classroom. According to the CVT, FLB belongs to a kind of “deactivating emotion,” which causes learners to reduce the allocation of cognitive resources, avoid challenging learning tasks, and ultimately have a negative impact on language learning (He et al., 2025). CVT proposes that an individual’s perception of control and value over achievement tasks and outcomes leads to boredom (Pekrun, 2006). Boredom arises when perceived control is too high or too low and perceived value is insufficient (Goetz et al., 2024). When students encounter boredom in the learning process, they lose their perspective on time, experience exhaustion or frustration, and disengage from their educational efforts (Liu et al., 2025).

Over the past 5 years, FLB has emerged as a focal construct in the burgeoning field of foreign language emotions research. Dewaele et al. (2023) found that Moroccan EFL learners’ FLB had a significant negative effect on their English achievement and stated that it was the second most important emotional factor after FLA. Li (2022) and Zhao and Wang (2023b) found that the FLB of Chinese EFL learners can significantly and negatively affect their English achievement. Li and Wei (2023) longitudinal study on rural Chinese junior high school students revealed that the significant effect of FLB on English performance was found to be short-term and fragile, lasting just

1 month and easily overshadowed by other emotions in the joint model. Notably, despite the substantial body of research on FLB in EFL contexts, most studies have been conducted in China. Research on language learners in other countries and other languages is still severely inadequate. Furthermore, the participants in the aforementioned studies comprised either European adults who actively pursued English or Chinese students who studied English as part of their examination requirements (college entrance or university English examinations), which markedly contrasts with the passive learning tendencies observed among CFL learners in the Thai context. Many Thai students have started learning Chinese since primary school, resulting in a diminished sense of novelty regarding Chinese learning and instruction (Ning and Tananuraksakul, 2024).

In the context of CFL, there exists a scarcity of studies investigating the relationship between FLB and CLA. Pretty (2019) noticed that the FLB experienced by EFL learners at the Confucius Institute at the University of Zimbabwe mainly arises from monotonous teaching methods, which diminish their learning motivation and achievement for studying the Chinese language. However, the study relies solely on qualitative interviews to derive its conclusions, as it lacks quantitative data support, thus potentially limiting its generalizability. Li (2024) stated that in CFL instruction, FLB serves as a critical emotional barrier, indirectly eroding CLA by disrupting the cognitive and motivational processes essential for effective Chinese language acquisition. However, this research concentrates on online CFL education, and the influence of students' FLB on academic achievement in non-online CFL settings remains unexamined. Also, it is essential to investigate in further detail if FLB directly influences CLA within the CFL context. One of the reasons contributing to the inadequate Chinese language proficiency among many Thai students until the undergraduate level is their lack of enthusiasm for learning Chinese (Xu et al., 2022), which could influence their perception of FLB. Due to the complexity of Chinese and the lack of engaging pedagogical practices in some classrooms, Thai students may develop adaptive strategies toward mandatory Chinese courses, such as reduced engagement, thereby exacerbating FLB (Cao and Tananuraksakul, 2023; Ning and Tananuraksakul, 2024). Based on previous research findings, an in-depth analysis of how FLB influences CLA in the particular context of Thailand is necessary. The researchers proposed the following hypotheses.

H4: FLB is positively associated with CLA.

2.3.3 Foreign language enjoyment (FLE)

MacIntyre (2016) defined FLE as learners' positive emotions associated with completing learning activities, expanding their knowledge, and attaining competency. When learners perceive language learning as inherently enjoyable, their intrinsic motivation escalates, resulting in heightened engagement and enhanced learning achievements (Zeng, 2021). Students who enjoy language learning exhibit less anxiety and heightened motivation to communicate in the target language (Botes et al., 2022). This virtuous loop will enhance learners' confidence in their language capabilities, hence enhancing language competence (Zhang et al., 2024). The role of FLE is to serve as a motivational "buoy" that assists learners in resisting external pressures and maintaining long-term dedication to learning via dynamic interaction with motivation (Dewaele et al., 2023). This study defines FLE as the emotions of pleasure, vigor, and satisfaction that Thai students experience when learning Chinese. In

CVT, FLE is classified as "positive activating emotions," including feelings of pleasure, happiness, curiosity, and engagement in the learning process (Dewaele and MacIntyre, 2016). As a positive emotion, FLE can boost cognitive resources (e.g., concentration and creativity), hence facilitating active learning among language learners and thereby indirectly improving academic achievements (MacIntyre and Gregersen, 2012). Based on CVT, students who enjoy the foreign language learning process are more likely to be motivated to participate in classroom activities and increase their commitment to learning, which enhances foreign language achievement (Li and Xing, 2024).

Most research related to FLE is undertaken within the context of EFL. Li and Wei's (2023) longitudinal study found FLE among rural Chinese junior high school EFL learners to be an independent and persistent predictor of English achievement. The studies by Dewaele et al. (2023) on Moroccan EFL learners and Fathi and Hejazi (2024) on Iranian EFL learners consistently conclude that FLE positively and significantly influences their English language achievement. Hu et al. (2024) pointed out that the FLE of Chinese undergraduate-level EFL learners significantly affected English performance. The above studies clearly illustrate the significance of FLE for English language learning achievement. However, substantial distinctions exist between learning Chinese and English, with Chinese often seen as more challenging for non-native speakers (Shen, 2005). The memorization of Chinese characters, mastery of tonal pronunciation, and understanding of culturally loaded vocabulary pose substantial obstacles for CFL learners, resulting in a lack of enjoyment in the Chinese learning process and classroom experiences (Hao, 2012; Yang, 2018).

The impact of FLE on CLA in the context of CFL remains inadequately researched. Zhang and Tsung (2021) investigated international students in Chinese universities and discovered that their FLE could significantly impact their CLA. However, most of these international students are adult learners who voluntarily come to China for their education and are enthusiastic about learning Chinese. Furthermore, they had a more advantageous Chinese language immersion learning environment in China. Hence, the results from Zhang and Tsung (2021) may not be applicable to the present study. Zheng et al. (2023) indicated that FLE is critical to enhancing the learning experience of CFL learners by enhancing their learning motivation and engagement, which in turn influences their CLA. However, this conclusion heavily relies on the interview, and whether FLE significantly affects CLA still needs to be confirmed by empirical research. Thailand is a Buddhist country, and Thai students are influenced by the concepts of "sati" (positive mindfulness) and "sukha" (happiness and fulfillment) and believe that education should be pleasant (Yang and Chanyoo, 2022). In such a cultural context, Thai students will place great importance on the enjoyment of their language learning process. The pronunciation and character writing of Chinese provide considerable difficulties for Thai students, and if they fail to perceive the learning process as sufficiently engaging and enjoyable, their motivation to study further reduces (Ning and Tananuraksakul, 2024). In other words, because Thai students highly value enjoyment, promoting FLE in Chinese classes can reduce learning stress and boost students' internal motivation to overcome challenges, thus improving Chinese learning outcomes. However, as of now, there is not enough research on FLE for Thai students. Based on previous research findings, the following hypotheses were proposed.

H5: FLE is positively associated with CLA.

3 Research methods

3.1 Research design and sampling

This study focused on high school students studying Chinese at two private and three public schools in Bangkok, Thailand. Employing a quantitative cross-sectional approach, the researchers utilized a questionnaire and the HSK2 mock exam as the research instruments. The convenience sampling method was utilized for this study. Notably, the third author, affiliated with a reputable Chinese language education organization responsible for deploying instructors to various schools in Bangkok, facilitated data collection from a sample comprising 665 participants drawn from 23 classes spanning five schools. The data collection process involved distributing and collecting questionnaires by the six Chinese language teachers affiliated with the educational institution. They also compiled and provided students' HSK2 scores that were utilized in the analysis.

Participants did not include Chinese nationals, ethnic Chinese who use Chinese at home, or Chinese-major students. The HSK mock exam and questionnaire collection were all conducted in the Chinese classroom, with paper printouts for the HSK exam and Google Forms for the questionnaire. The HSK exam served the primary purpose of assessing the participants' authentic Chinese proficiency, as they were unaware of the HSK mock exam prior to the lesson and thus had not made adequate preparations for it. This mock examination allocates 50 min for completion, with an additional 10-min interval provided subsequent to its conclusion for students to fill out the questionnaire.

In order to protect the privacy of participants, information such as names or student IDs was not collected from participants. Explicit informed consent was obtained from all participants and their respective guardians to utilize their questionnaire responses and HSK2 scores in the data analysis phase. The researchers ensured the confidentiality and privacy of all participants by deleting demographic information and HSK2 scores within 7 days following the study's completion. The researchers provided all participants with a small gift of appreciation, valued at approximately 10 baht, as a gesture of gratitude.

Among 665 participants, 228 (34.29%) were males, while 437 (65.71%) were females. Regarding their grade, 326 participants (49.02%) were high school freshmen, 230 participants (34.59%) were high school sophomores, and 109 participants (16.39%) were high school juniors. Moreover, 465 participants (69.92%) studied at public schools, while 200 participants (30.08%) studied at private schools. Regarding their Chinese learning experience, 8 participants (1.20%) had less than 1 year of experience in learning Chinese, 58 participants (8.72%) had between 1 and 3 years of experience, 225 participants (33.83%) had between 3 and 5 years of experience, and 374 participants (56.24%) had more than 5 years of experience.

3.2 Research instruments

This study comprises two research instruments: an HSK2 exam paper and a questionnaire.

Following in-depth discussions with several Chinese language teachers in Thailand, the researchers selected the HSK Level 2 exam as the instrument for measuring CLA. The unannounced format prevented last-minute cramming and thus more accurately reflected students' true Chinese proficiency. Additionally, excluding students

aiming to take the Chinese language as an option in Thai university entrance exams or those preparing for HSK to study at Chinese universities, the majority of students do not invest significant time in preparing for Chinese language tests (especially official HSK exams) during their high school years, instead viewing Chinese as a means to explore Chinese culture. Furthermore, most Thai students' Chinese language proficiency remains inadequate, even at the adult level (Xu et al., 2022). Therefore, at the suggestion of the expert teachers, the researchers uniformly used a beginner-level HSK exam (level 2) to test the CLA of Thai high school students. The HSK exam paper selected for this study is the HSK mock exam sample (H21005), which is available for free on the official website of Chinese Testing International. This mock exam paper has two sections: Listening and Reading. It consists of 60 questions, with a combined score of 200 points (100 points for each section). A score of 120 points or above (60%) is the threshold for a passing grade.

The questionnaire consisted of two sections: demographic questions and scales. The researchers collected participants' demographic information, including age, gender, school, and Chinese learning experiences, but not names or student IDs. All scales were on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). Before the formal distribution of the questionnaires, the researchers conducted a pre-test by distributing 50 questionnaires to students in two Bangkok high schools (one private and one public) to establish whether the selected scales were internally consistent and reliable.

The Child and Adolescent Social Support Scale (CASSS), developed by Malecki and Demaray (2002), systematically measures social support from parents, teachers, classmates, and friends during the learning process, and the PTS scale for the present study adapted 10 items from the CASSS regarding teacher support. In the pre-test, one of the items, "My Chinese teacher helps me when I get confused," was removed by researchers because its Corrected Item-Total Correlation (CITC) value was too low (0.298). The remaining item had a Cronbach's alpha of 0.728, which has sufficient internal consistency. The GR scale was adapted from Teimouri et al. (2022), with two sub-dimensions and nine items, of which persistence of effort (POE) consists of five items and consistency of interest (COI) consists of four items. In the pre-test, the Cronbach's alpha for the two sub-dimensions was 0.852 and 0.880, so this scale had sufficient internal consistency. The FLE scale was adapted from the nine-item Short Form of the Foreign Language Enjoyment Scale (S-FLES) developed by Botes et al. (2021), which consists of three sub-dimensions: Teacher Appreciation (TA), Personal Enjoyment (PE), and Social Enjoyment (SE). In the pre-test, the item from SE, "We have common 'legends,' such as running jokes," was removed because it had a low CITC value (0.354). After excluding this item, the Cronbach's alphas for the three sub-dimensions in this study were 0.820, 0.788, and 0.724, with sufficient internal consistency. The Foreign Language Classroom Anxiety Scale (FLCAS) is the classic instrument most commonly used to measure FLA (Horwitz, 2017). The FLA scale in this study utilized Dewaele and Macintyre (2014) 8-item Short Form of the Foreign Language Classroom Anxiety Scale (S-FLCAS), which is more brief but still has sufficient validity. In the pre-test, this scale had a Cronbach's alpha of 0.824. The FLB scale, adapted from the 8-item Foreign Language Boredom Scale (FLBS) developed by Li et al. (2023), is used to measure boredom levels among Thai students in Chinese language classrooms. This scale had a Cronbach's alpha of 0.902 in the pre-test.

3.3 Data analysis

First, the researchers utilized SPSS Statistics 24 software to analyze the frequencies and percentages of all demographic information. After that, through SmartPLS 4 software, the researchers conducted step-by-step analyses of internal consistency (reliability) and convergent and discriminant validity for all constructs (scales) in this study. After re-establishing that the proposed model has sufficient reliability and validity, the researchers proceeded to hypothesis testing. Although the sample size of this study was quite sufficient, the researchers still chose Partial Least Squares Structural Equation Modelling (PLS-SEM), not Covariance-based Structural Equation Modelling (CB-SEM). PLS-SEM was chosen because the proposed model simultaneously considered PTS, GR, and emotional factors to develop an innovative conceptual framework for predicting Thai students' CLA. PLS-SEM is more suitable for testing exploratory models, while CB-SEM is more suitable for re-testing classical theoretical models (Afthanorhan et al., 2020). Besides, both GR and FLE scales in this study contain sub-dimensions; thus, the model is higher-order. PLS-SEM is relatively more convenient and suitable for predicting higher-order models than CB-SEM (Hair et al., 2013). Finally, the analysis of indirect effects was also performed with the SmartPLS 4 software (Figure 1).

4 Results

4.1 Descriptive analysis

Table 1 presents the basic information of the descriptive statistics for all constructs, covering the maximum value, minimum value, mean, standard deviation, skewness, and kurtosis. It can be observed that the mean values of the two variables (SE and TA) within FLE are relatively high (greater than 3.5), while the mean values of the two variables (COI and POE) in Grit are relatively low (less than 2.5). The mean values of the remaining variables are at moderate levels. The

mean value of the students' HSK scores (CLA) is 118.91, with a standard deviation of 32.72.

When skewness and kurtosis approach zero, the data are considered to follow a normal distribution. In PLS-SEM analysis, when skewness and kurtosis are within the range of ± 2 , the data can be regarded as approximately normally distributed (Hair and Alamer, 2022). As shown in Table 1, the skewness and kurtosis of each variable fall within the range of ± 2 . Therefore, all these variables tend to follow a normal distribution. Since all variables tend to follow a normal distribution, the researchers employed the Pearson correlation coefficient matrix to measure the relationship among variables. As depicted in Figure 2, significant correlations exist among all variables. Notably, the two variables, FLA and FLB, exhibit correlations in different directions with other variables.

4.2 Measurement model

The researchers first analyzed the presence of multicollinearity for individual items in the model. The Variance Inflation Factor (VIF) is an important indicator used to measure multicollinearity, and generally, a VIF value below 5 proves that there is no severe multicollinearity problem (Kim, 2019). The VIF values in this study ranged from 1.753 to 2.789, meaning there is no severe issue of multicollinearity.

Cronbach's alpha was used to evaluate the internal consistency of items within each dimension. A Cronbach's alpha above 0.7 indicated both internal consistency throughout dimensions and the reliability of the study. As shown in Table 2, Cronbach's alpha for the constructs (scales) ranged from 0.770 to 0.930, showing good internal consistency and reliability.

Convergent validity can be assessed by examining factor loading, composite reliability, and average variance extracted (AVE). Factor loadings reflect the correlation between observed and latent variables, with values above 0.6 deemed acceptable (Awang, 2015). The factor

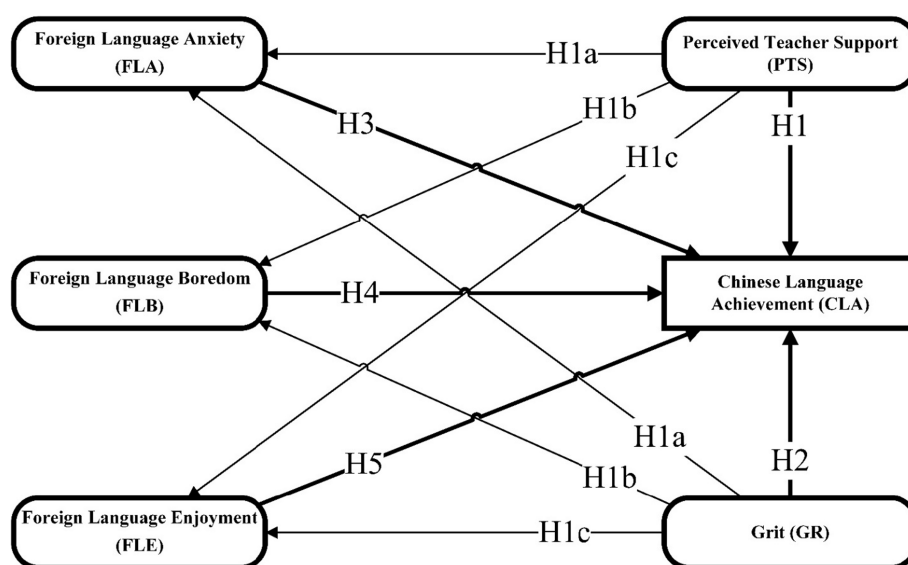
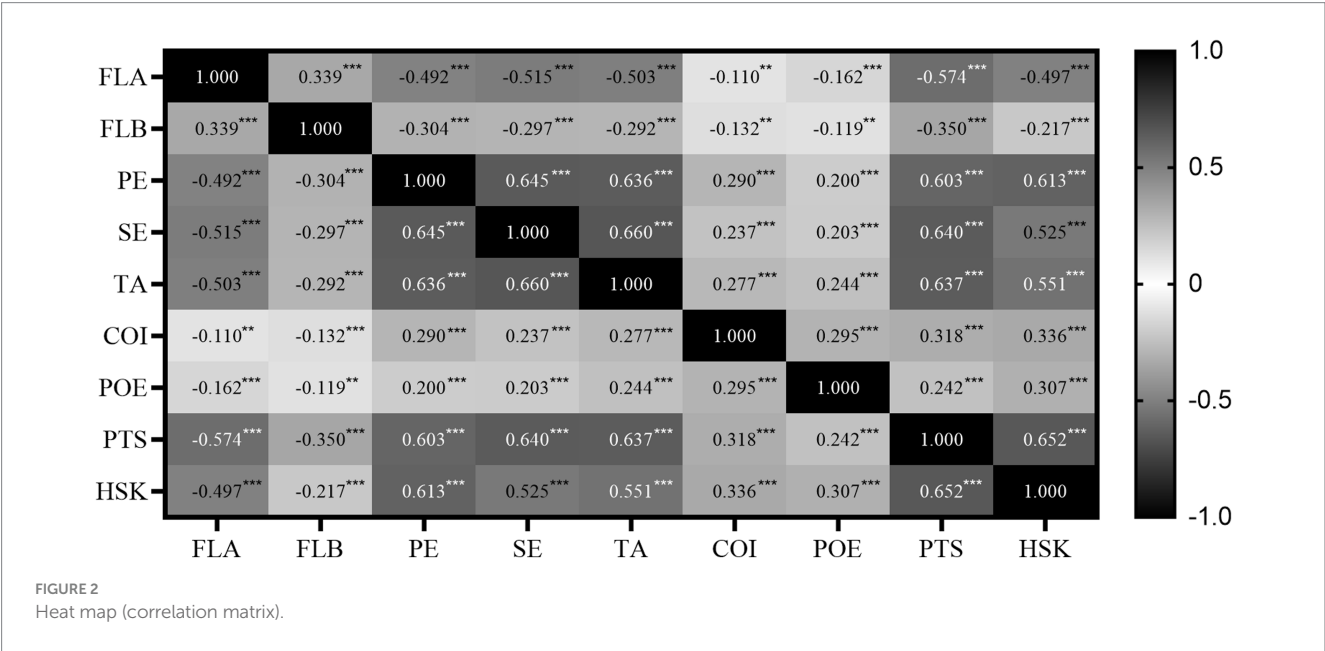


FIGURE 1
The conceptual framework.

TABLE 1 Descriptive analysis.

Variables	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
FLA	1.25	4.63	2.89	0.67	−0.038	−0.373
FLB	1.00	4.75	2.99	0.69	−0.142	−0.597
PE	1.33	5.00	3.02	0.65	−0.024	−0.492
SE	1.50	5.00	3.55	0.68	0.021	−0.239
TA	1.33	5.00	3.59	0.66	−0.022	0.153
COI	1.25	5.00	2.46	0.47	−0.034	−0.532
POE	1.40	4.60	2.43	0.50	−0.067	−0.201
PTS	1.50	5.00	3.39	0.59	−0.083	−0.261
HSK	65.00	200.00	118.91	32.72	0.774	−0.088



loadings of the scale items in this study are shown in Table 2 and ranged from 0.737 to 0.906, which is within the acceptable range. Composite reliability (CR) measured the model's internal consistency, with a threshold of 0.7 regarded as acceptable (Hair, 2010). As shown in Table 2, the CRs in this study ranged from 0.770 to 0.933, demonstrating that all constructs (scales) had sufficient internal consistency. The Average Variance Extracted (AVE) serves as a crucial metric for evaluating convergent validity, with an AVE value exceeding 0.5 denoting satisfactory convergent validity (Fornell and Larcker, 1981). As shown in Table 2, the AVE values for all constructs (scales) ranged from 0.585 to 0.813, which are all within the acceptable range. Therefore, all constructs in this study have sufficient convergent validity.

Discriminant validity can be established when the square root of the AVE for each dimension exceeds the correlation coefficients of the other dimensions associated with it (Fornell and Larcker, 1981). As shown in Table 3, the square root of the AVE values for all constructs (scales) in this study was greater than the corresponding correlation coefficients. Therefore, the present study has sufficient discriminant validity. The heterotrait-monotrait ratio of correlations (HTMT) is a novel measure of whether latent variables have discriminant validity

(Henseler et al., 2015). When all values in the HTMT matrix are less than 0.85, the study has sufficient discriminant validity. As shown in Table 4, the HTMT matrix shows that the HTMT values between all the constructs (scales) were less than 0.85, and the discriminant validity of the study was again validated.

4.3 Structural model

Once the reliability and validity were established, the researchers proceeded to test the hypotheses using SmartPLS 4.0. The percentile bootstrap technique with 5,000 iterative resamples was used in this research, as suggested by Hair et al. (2017).

As shown in Table 5, all the constructs were significantly related to CLA. PTS had the strongest significant and positive association with CLA ($\beta = 0.334, p < 0.001$), while FLA ($\beta = -0.330, p < 0.001$) and FLB ($\beta = -0.097, p < 0.001$) were significantly and negatively associated with CLA, and GR ($\beta = 0.140, p < 0.001$) and FLE ($\beta = 0.207, p < 0.001$) were significantly and positively associated with CLA. PTS was significantly associated with all of the emotional factors. In particular, PTS was significantly and positively associated

TABLE 2 Reliability and convergent validity.

Construct	Items	Factor loading	Alpha	CR	AVE
GR—POE	POE1	0.763	0.848	0.848	0.622
	POE2	0.781			
	POE3	0.790			
	POE4	0.819			
	POE5	0.787			
GR—COI	COI1	0.770	0.814	0.816	0.642
	COI2	0.814			
	COI3	0.819			
	COI4	0.802			
PTS	PTS1	0.766	0.899	0.899	0.585
	PTS2	0.760			
	PTS3	0.803			
	PTS4	0.759			
	PTS5	0.756			
	PTS6	0.797			
	PTS7	0.738			
	PTS8	0.737			
FLA	FLA1	0.787	0.927	0.927	0.661
	FLA2	0.813			
	FLA3	0.845			
	FLA4	0.797			
	FLA5	0.825			
	FLA6	0.836			
	FLA7	0.809			
	FLA8	0.792			
FLE—PE	PE1	0.876	0.845	0.845	0.763
	PE2	0.876			
	PE3	0.868			
FLE—TA	TA1	0.870	0.837	0.838	0.754
	TA2	0.876			
	TA3	0.860			
FLE—SE	SE1	0.898	0.770	0.771	0.813
	SE2	0.906			
FLB	FLB1	0.842	0.930	0.933	0.661
	FLB2	0.809			
	FLB3	0.771			
	FLB4	0.803			
	FLB5	0.849			
	FLB6	0.821			
	FLB7	0.853			
	FLB8	0.810			

with FLE ($\beta = 0.674, p < 0.001$) and was significantly and negatively associated with FLA ($\beta = -0.583, p < 0.001$) and FLB ($\beta = -0.339, p < 0.001$). GR was not significantly associated with FLB ($\beta = -0.039, p = 0.315$) and FLA ($\beta = 0.027, p = 0.417$), while it was significantly

and positively associated with FLE ($\beta = 0.105, p < 0.001$). The results of PLS-SEM in this study are shown in [Figure 3](#).

As shown in [Table 6](#), FLA ($\beta = 0.192, p < 0.001$), FLB ($\beta = 0.033, p < 0.001$), and FLE ($\beta = 0.140, p < 0.001$) were each significant mediators of the association between PTS and CLA; FLA ($\beta = 0.009, p = 0.420$) and FLB ($\beta = 0.004, p = 0.333$) did not mediate the association between GR and CLA, while FLE ($\beta = 0.022, p = 0.001$) did.

The coefficient of determination (R^2) was employed to measure the proportion of the dependent variable that was predicted by the independent variable ([Cohen, 2013](#)). In this study, the R^2 for CLA was 0.726, which means that GR, PTS, and emotional factors explain 72.6% of Chinese learning achievement. The predictive relevance of a model is evaluated using Q^2 , whereby a value greater than 0 indicates the model's satisfactory predictive capability. The Q^2 of Chinese language learning is 0.611, which means the model has a good predictive ability for Chinese language learning. F-squared (f^2) denotes the change in R^2 when an exogenous variable is excluded from the model. According to [Cohen \(2013\)](#), an effect size is considered small when f^2 is higher than 0.02, medium when f^2 is higher than 0.15, and large when f^2 is higher than 0.35. In the current study, FLA ($f^2 = 0.237$) and PTS ($f^2 = 0.178$) had moderate effects on CLA, and GR ($f^2 = 0.062$) and FLE ($f^2 = 0.069$) had small effects on CLA.

5 Discussion and implications

Although research on language achievement has long been a popular topic in studies related to foreign language learning, most research has been conducted in EFL contexts, and there is a serious shortage of research on CFL. This study aimed to examine the associations of GR, PTS, and emotions (FLA, FLB, FLE) with CLA in Chinese language learning among Thai high school students. By considering both the associations of student factors (GR) and teacher factors (PTS) with CLA, as well as the mediating role of emotional factors in CLA, the proposed model has good explanatory power ($R^2 = 0.726$) for Thai students' CLA. Thus, it offers a novel perspective and a multi-dimensional model for future research on CFL and other foreign language learning contexts. Besides, this study elucidated the influence of "positive mindfulness" and "happiness and fulfillment" on students' emotional experiences and learning behaviors within Thai Buddhist culture, offering a novel interpretation of cross-cultural language learning theory, which posits that cultural values enhance motivation for language acquisition and subsequently improve learning achievement. Future research could elevate cultural values from 'background variables' into 'explanatory variables,' thereby enriching the explanatory framework of cross-cultural linguistic studies. A detailed discussion of the results is described below.

According to the findings, PTS is the strongest predictor of CLA, and it is positively and significantly associated with CLA ($H1$), consistent with previous studies' results ([Hejazi and Sadoughi, 2023](#); [Tao et al., 2022](#)). By providing various kinds of assistance, assessment, and feedback based on learners' abilities, teachers can contribute to students' success ([Leon et al., 2017](#)). Many Thai students encounter difficulties and challenges in learning Chinese, and the support provided by Chinese teachers motivates them to keep learning Chinese, which also benefits their language achievement. Regarding the association between PTS and emotions, firstly, Thai students' PTS was negatively and significantly associated with FLA ($H1a$), consistent

TABLE 3 Fornell-Larcker criterion.

Variables	FLA	FLB	PE	SE	TA	CI	POE	PTS
FLA	0.813							
FLB	0.339	0.820						
PE	−0.492	−0.304	0.873					
SE	−0.515	−0.297	0.645	0.902				
TA	−0.503	−0.293	0.636	0.660	0.869			
CI	−0.110	−0.133	0.291	0.237	0.277	0.801		
POE	−0.162	−0.119	0.201	0.203	0.244	0.295	0.788	
PTS	−0.574	−0.353	0.604	0.640	0.637	0.318	0.242	0.765

The bold values represent the square roots of the average variance extracted (AVE).

TABLE 4 Heterotrait-monotrait ratio of correlations (HTMT).

Variables	FLA	FLB	PE	SE	TA	CI	POE	PTS
FLA								
FLB	0.364							
PE	0.556	0.341						
SE	0.609	0.349	0.799					
TA	0.570	0.331	0.756	0.821				
CI	0.127	0.152	0.350	0.298	0.334			
POE	0.184	0.136	0.237	0.252	0.290	0.353		
PTS	0.629	0.383	0.692	0.768	0.734	0.372	0.278	

with previous studies’ findings (Liu et al., 2023; Piechurska-Kuciel, 2011). Providing sufficient support by CFL teachers can alleviate anxiety among Thai students in the Chinese classroom, fostering a more relaxed learning environment. Likewise, PTS was negatively and significantly associated with FLB (*H1b*), which is consistent with the results of previous studies (Wu et al., 2023; Zhao and Yang, 2022). As Kruk and Zawodniak (2018) pointed out, teachers are the most significant contributors to student boredom. When students recognize that CFL teachers want to provide them with support, their psychological needs are fulfilled, hence enhancing cognitive engagement and emotional empathy, which mitigates their boredom in the learning process. Furthermore, PTS was also positively and significantly associated with FLE (*H1c*), consistent with some previous studies (Liu and Zhou, 2024; Zhao and Yang, 2022). When Thai students perceive adequate support from their CFL teachers, harmonious teacher-student relationships and classroom environments are fostered, enhancing their enjoyment of Chinese language learning. The strong associations of PTS with three key emotions also highlight the importance of teacher support in language learning.

This study also found that all three language-learning emotions (FLA, FLB, and FLE) were able to mediate the associations between PTS and CLA significantly. First, FLA served as a mediator for the relationship between PTS and CLA. Thai students’ FLA tends to decline when they believe their CFL teachers provide sufficient support (such as timely error correction or interesting learning materials), reducing cognitive load and enhancing CLA. FLB can also mediate the association between PTS and CLA. Students feel less bored when they believe that their teachers are supporting them, for example, by implementing gamified teaching or a variety of instructional activities

like role-playing in the classroom. This decrease in boredom, in turn, improves focus and indirectly leads to better academic achievement. Students’ interest and curiosity about language learning are piqued when they believe that their CFL teachers offer assistance, such as supportive feedback and autonomy support. Consequently, this leads to improved language proficiency. CFL teachers should take the initiative to get to know their students and give customized support based on their language level and emotional needs, making more students feel that their teachers are offering them support. Such personalized teaching strategies could potentially reduce learning-related anxiety and boredom, foster enjoyment in Chinese language learning, and ultimately improve long-term language outcomes.

Many CFL teachers, especially inexperienced ones, often struggle to ensure their support is effectively perceived by students when providing assistance. Some CFL teachers in Thailand continue to encounter many challenges, including language communication barriers and insufficient cultural acclimatization (Duangmanee and Waluyo, 2023). Language barriers could hinder trust-building between teachers and students, while cultural misunderstandings limit CFL teachers’ local adaptation of teaching methods (Wang and Du, 2016). These challenges undermine Thai students’ PTS and hinder the development of language proficiency. CFL teachers should systematically improve intercultural competence and local language proficiency through customized language training or cultural immersion (e.g., participation in intensive Thai language courses and Buddhist cultural studies). Also, CFL teachers can provide students with interesting insights about Chinese culture while simultaneously encouraging them to share their knowledge of Thai culture in the Chinese language classroom, thus fostering cultural exchange and mutual understanding. Thai schools and educational institutions can frequently organize cross-cultural communication activities between CFL teachers and local teachers to enhance CFL teachers’ local cultural interpretation capabilities and instructional strategy adaptability while fostering mutual collaboration among educators. Educational administrators evaluating CFL teachers should not solely focus on teachers’ Chinese proficiency and instructional methodologies but prioritize student perspectives and evaluations, given that students’ perceived teacher support significantly contributes to enhancing their language learning emotions and outcomes.

Thai students’ GR was significantly and positively associated with their CLA (*H2*), consistent with extensive previous research (Fathi and Hejazi, 2024; Teimouri et al., 2022). Chinese language learning is challenging, and learners must spend much time and energy on it (Steinmayr et al., 2018). The GR exhibited by Thai students, particularly their perseverance in Chinese language learning over the long term, plays a vital role in their capacity to persist through the entire learning process, subsequently influencing their CLA. Furthermore, Thai students’ GR was significantly and positively associated with their FLE (*H2a*), consistent with the findings of previous studies (Bensalem et al., 2024; Khajavy and Aghaee, 2024). Learners who maintain consistent engagement in language learning over an extended period tend to report higher levels of enjoyment (Yeşilçınar and Erdemir, 2023). CFL learners who possess a high level of GR are more likely to consider Chinese language learning as their interest, and they often watch Chinese movies, read Chinese books, and participate in Chinese cultural activities, which makes them believe Chinese learning is enjoyable (Wang et al., 2022; Zhao and Wang, 2024). Interestingly, it was found that GR was not significantly

TABLE 5 Hypothesis testing.

Hypotheses	Path	Original sample (O)	STDEV	t	p-values	Results
H1	PTS → CLA	0.334	0.029	11.470	***	Supported
H1a	PTS → FLA	−0.583	0.027	21.574	***	Supported
H1b	PTS → FLB	−0.339	0.036	9.462	***	Supported
H1c	PTS → FLE	0.674	0.021	31.741	***	Supported
H2	GR → CLA	0.140	0.022	6.326	***	Supported
H2a	GR → FLA	0.027	0.033	0.811	0.417	Not Supported
H2b	GR → FLB	−0.039	0.039	1.004	0.315	Not Supported
H2c	GR → FLE	0.105	0.029	3.620	***	Supported
H3	FLA → CLA	−0.330	0.025	13.266	***	Supported
H4	FLB → CLA	−0.097	0.021	4.569	***	Supported
H5	FLE → CLA	0.207	0.027	7.596	***	Supported

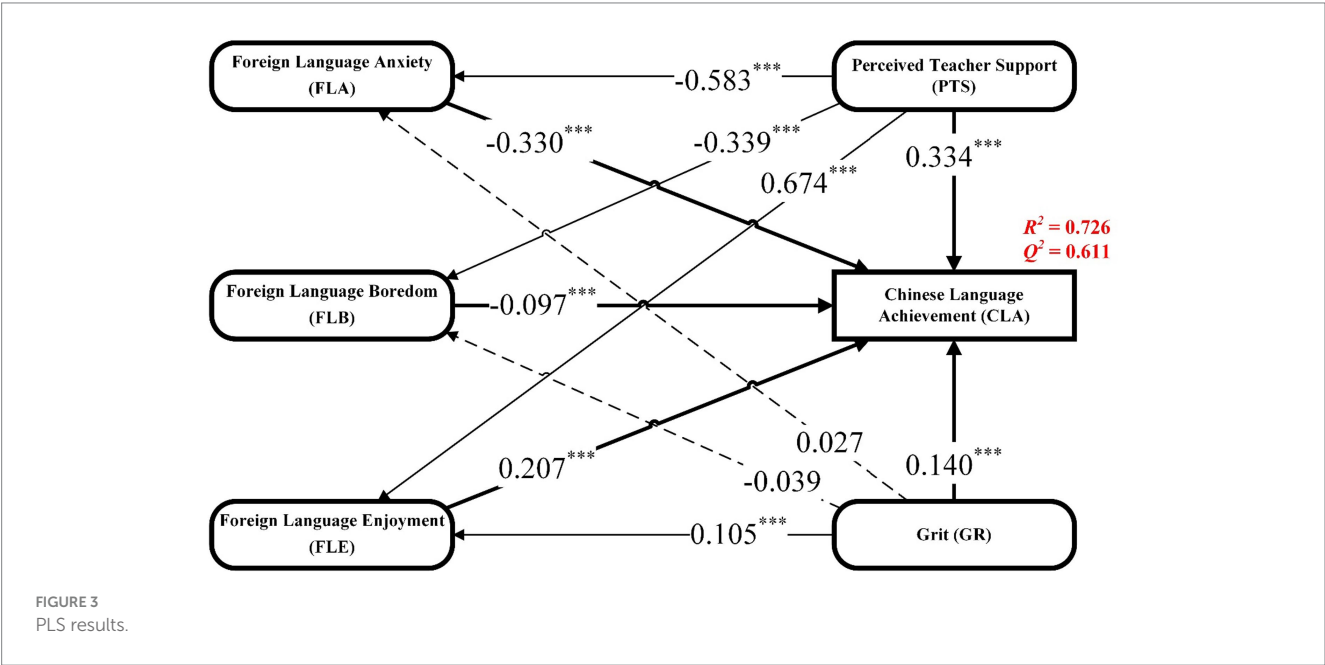


TABLE 6 Indirect effects.

Path	Original sample (O)	STDEV	t	p-values
PTS → FLA → CLA	0.192	0.017	11.316	***
PTS → FLB → CLA	0.033	0.008	4.041	***
PTS → FLE → CLA	0.140	0.019	7.348	***
GR → FLA → CLA	0.009	0.011	0.807	0.420
GR → FLB → CLA	0.004	0.004	0.968	0.333
GR → FLE → CLA	0.022	0.007	3.289	0.001**

associated with FLA and FLB (*H2b* & *H2c*). Although some Thai students possess high GR in Chinese language learning, they may still lack confidence in their proficiency. It can lead to FLA and FLB in the classroom, where students may be afraid of making mistakes or being judged by their teacher. Many CFL learners try to persist in learning

Chinese, but they still experience FLA and FLB due to cultural differences, lack of confidence, inappropriate teaching methods, and depressing learning environment (Chen et al., 2024; Tai and Wang, 2024). Furthermore, FLE can mediate the association between GR and CLA, but FLA and FLB cannot. Thus, among Thai CFL learners, GR promotes CLA primarily through fostering learning enjoyment rather than alleviating anxiety and boredom. Thai CFL learners with higher GR may consciously create environments that make learning more engaging, such as selecting interesting materials and implementing self-reward mechanisms, thereby enhancing FLE to enhance CLA. Once again, it revealed the importance of GR for Thai students learning Chinese and the feasibility of influencing FLE and thus increasing CLA by raising the GR of Thai students learning Chinese.

Despite years of study, Thai students' confidence and GR are undermined by the significant challenges in learning Chinese, which include tonal complexity, character writing, grammatical disparities, and cultural differences. Thai Buddhist culture emphasizes "patience" and "long-term practice," so Thai students generally have a relatively

high level of GR (Freiermuth et al., 2021). CFL teachers should tailor customized learning content for different learners, provide prompt feedback and encouragement, and assist students in overcoming challenges, thus bolstering their GR in learning Chinese. Another effective approach is setting a good example for students by showcasing teachers' language learning journeys (e.g., learning Thai) while highlighting classmates demonstrating dedication to Chinese studies. This helps students internalize the understanding that Chinese language learning requires sustained effort, fostering the development of GR. Thai schools and educational institutions could frequently organize Chinese language activities, such as Chinese knowledge competitions, Chinese speeches, Chinese cultural exhibitions, etc., to give students opportunities to display their talents, stimulate their motivation, and thus cultivate their grit. Furthermore, it is also a great way to provide Thai students with Chinese learning resources they are interested in, such as Chinese novels, skits, videos, etc., which facilitates students' independent learning, meets their long-term learning needs, and thus enhances GR.

FLA was significantly and negatively associated with CLA (H3), consistent with previous studies (Li and Wei, 2023; Li and Xing, 2024). In the Chinese language classroom, when Thai students feel FLA, they may have difficulty concentrating on instruction, memorizing knowledge, and interacting with teachers, eventually leading to lower Chinese achievement. Therefore, CFL teachers are encouraged to cultivate a safe, friendly, and supportive environment in the classroom for their students, promoting more engagement in classroom activities to alleviate their anxieties and tensions. Some CFL teachers frequently conduct quizzes (e.g., Chinese dictation, random questions, grammar drills, etc.) in class, which can cause anxiety among unprepared students. Reducing the frequency of these quizzes, providing advance notice of upcoming tests, and encouraging students to prepare are highly effective in reducing FLA among Thai students. For Thai schools and educational institutions, providing timely psychological counseling and tutoring services can effectively alleviate Thai students' FLA and promote mental health, thus enhancing their Chinese learning outcomes.

FLB was significantly and negatively associated with CLA (H4), consistent with previous studies (Li, 2022; Zhao and Wang, 2023b). Boredom in the Chinese classroom among Thai students can decrease their engagement in the classroom. In Chinese classrooms, students' lack of engagement will lead to an inability to concentrate on listening and actively participate in classroom interactions, ultimately affecting students' CLA. CFL teachers can enhance Thai students' Chinese learning by breaking down long-term goals into short-term achievable sub-goals and consistently fostering their motivation through incremental progress. Besides, timely encouragement and affirmation of Thai students' previous CLA are effective strategies to maintain their motivation and enable them to persist in learning Chinese in the long term. Thai schools and educational institutions can optimize Chinese curriculum design by tailoring objectives for non-specialized learners and encouraging CFL teachers to integrate engaging cultural activities like calligraphy, music, and painting into lessons.

Lastly, FLE was positively and significantly associated with CLA (H5), consistent with previous studies (Hu and Bentler, 1999; Li and Wei, 2023). When Thai students have a strong FLE of Chinese

language learning, they are more likely to be active, participate in classroom activities, and engage in extra practices, ultimately leading to students' success in Chinese language learning. Therefore, CFL teachers are expected to optimize their teaching methods to make the Chinese language classroom more interesting. For instance, integrating elements of interest to students (such as Chinese movies or games they engage with) into classroom activities can enhance learner engagement and interactivity, fostering an enjoyable and relaxed Chinese learning environment. Thai schools and educational institutions are encouraged to organize Chinese language activities on specific dates (e.g., Chinese New Year and Dragon Boat Festival) so that students can feel the enjoyable atmosphere of Chinese festivals and also learn Chinese while embracing Chinese culture.

6 Conclusion

This study aimed to explore the effects of Thai high school-level CFL learners' emotions (FLA, FLB, and FLE), PTS, and GR on CLA. The mediating effects of the three emotional variables on the relationships between PTS and CLA, as well as between GR and CLA, were also analyzed. Utilizing a cross-sectional survey design, this study involved students from five high schools in Bangkok. The researchers collected 665 valid data through a questionnaire and an HSK2 mock exam, which were analyzed using PLS-SEM. The hypothesis testing findings demonstrated that all PTS, GR, and emotion factors significantly impacted CLA. Besides, PTS was found to have a significant impact on all three emotions, whereas GR had a significant effect only on FLE. All three emotions were found to mediate the effects of PTS on CLA significantly; however, only FLE could mediate the effects of GR on CLA. This study emphasizes the importance of creating a supportive classroom environment, meeting students' affective needs, and implementing diverse teaching strategies to cultivate Thai students' long-term learning perseverance and thus improve their Chinese language learning achievement.

7 Limitations

The following limitations exist in this study. Firstly, the study employed a cross-sectional design, which limits its ability to establish causal relationships between variables. While the model revealed associations among PTS, GR, emotions, and CLA, it cannot definitively establish causal effects. It is recommended that future research employ longitudinal designs to track the dynamic evolution of these factors over time and their reciprocal influences. Second, as the study's sample included only CFL learners from Bangkok high schools, its conclusions may not be generalizable to other regions (particularly those outside Buddhist cultural contexts). Therefore, the researchers recommend that future studies employ or adapt this research model when conducting similar research in diverse regions to enhance the external validity. Lastly, this research did not consider the impact of external control variables on its results, and diverse demographic factors could affect the model's stability and prediction accuracy. Future research is advised to incorporate control variables such as gender, grade, and Chinese learning experience to enhance the model's predictive accuracy.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors without undue reservation.

Ethics statement

The studies involving humans were approved by Assumption University Institutional Review Boards. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

LP: Conceptualization, Formal analysis, Methodology, Project administration, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. XL: Conceptualization, Data curation, Writing – original draft, Writing – review & editing. XH: Data curation, Investigation, Writing – original draft, Writing – review & editing. HL: Funding acquisition, Methodology, Validation, Visualization, Writing – review & editing. QG: Conceptualization, Resources, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The authors declare that Gen AI was used in the creation of this manuscript. The researchers utilized ChatGPT, Grammarly, and Quillbot to enhance the readability of the article. All the content in the research is original to the authors.

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2025.1573713/full#supplementary-material>

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