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The Influence of Parents' Beliefs and Home Literacy Environment on Preschoolers' Attitudes toward Learning English as a Foreign Language

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Abstract. There are concerns about the negative impact of early English instruction on preschoolers' attitudes, especially regarding parents' beliefs (PB) and certain home literacy environments (HLE). However, limited research exists on how these factors influence young children's attitudes toward learning English. This study examined the impact of PB and HLE on preschoolers' attitudes toward learning English as a Foreign Language (EFL). Purposive sampling was utilized to select potential respondents from 14 administrative regions within Zhengzhou, China. A survey was conducted among 405 primary caregivers of English preschool learners, focusing on family demographics, perceptions of early English education, HLE, and preschoolers' learning attitudes. The data were analysed using partial least squares (PLS) analysis in structural equation modelling (SEM). Results affirmed how preschoolers' HLE significantly and distinctly influences their EFL learning attitudes via formal and informal learning activities as well as resource availability. Specifically, English literacy resources were found to shape preschool-age children's affective and cognitive attitudes, while caregiver reports on informal English learning at home has a predominant effect on preschoolers' behavioural attitude. Moreover, access to literacy resources at home serves as a critical intermediary between PB about the value of English education and preschoolers' cognitive attitude. These findings underline the importance of a supportive HLE and the benefits of interventions designed to modify parents' beliefs in fostering preschoolers' favorable attitudes toward EFL learning.

Keywords: preschoolers; learning attitudes; parents' beliefs; home literacy environment; English learning

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1. Introduction

Mastering multiple languages offers both tangible and intangible benefits, with studies showing that bilingual children's reading skills in both their mother tongue and additional languages enhance metalinguistic abilities such as phonological awareness (Bialystok, 2006; Chen et al., 2022). In the critical period of early childhood, parental influences, such as quality parent-child interactions and a literacy-enriched home setting, are key in nurturing preschoolers' literacy growth and affording them a broad spectrum of language experiences (Harris, 2013; Van Bergen et al., 2016). These elements are powerful predictors for mastering not only one's first language but also second and foreign languages (Kam Tse et al., 2017; Lau & Richards, 2021). Understanding the role of parents is therefore crucial for improving English as a Foreign Language (EFL) development among Chinese preschoolers.

Among the various parent-related factors, parents' beliefs (PB) stand out as a major determinant of EFL proficiency among preschoolers (DeBaryshe et al., 2000; Riches & Curdt-Christiansen, 2010; Weigel et al., 2006). Notably, PB significantly influences their educational practices and the home literacy environment (HLE) formation, thereby affecting young learners' attitudes toward language acquisition (Vasilyeva et al., 2018). The attitudes of learners have been identified as crucial in their language acquisition success (Al-Nofaie, 2018; Mahfouz & Salam, 2021). Heng and Karpudewan (2015) argued that the structural components of attitude—cognitive, affective, and behavioural—can predict language-related behaviours, exerting a direct or dynamic influence on individuals' responses, based on their experiences. Even so, most existing studies have concentrated on children's general attitudes, while the influence of preschoolers' HLE on their language learning attitudes remains relatively unexamined (Dixon & Wu, 2014; Zhang et al., 2023). Consequently, this research contends that the role of a conducive environment (e.g., positive parents' beliefs and home literacy environment) in learner engagement (i.e., preschoolers' various dimensions of attitude toward EFL learning) are critical and warrant investigation.

2. Literature Review

2.1. The impact of parents' beliefs on preschoolers' English language learning

Walker et al. (2005) built on the Parent Involvement model, identifying parents' motivational beliefs, perceptions of involvement invitations, and life context as key influences on parental engagement behaviours. These factors are shaped by parents' social and environmental contexts, including family culture. The model highlights how parents' perceptions of their availability, energy, skills, and knowledge facilitate involvement. Supported by Walker et al.'s (2005) review of conceptual and empirical research, Vasilyeva et al. (2018) have defined PB as parents' general opinions about children's developmental and learning processes, including about the appropriate HLE for children of a particular age, the skills they should possess before entering school, and the implications of parental engagement in their children's education.

Factors such as the number of English books, the frequency of English language activities, and the number of English language books parents read to their children were significantly related to parents' beliefs. Additionally, their study revealed that parents in Hong Kong play a role in promoting their children's English language

development. It aligns with earlier research indicating that Hong Kong parents consistently value their children's EFL learning and are willing to invest substantially in resources, including private English tutoring, English-speaking housekeepers, diverse English language materials, and family activities (Forey et al., 2016).

As previously mentioned, PB plays a direct role in children's development of HLE. An equally crucial aspect is that PB indirectly forecasts children's attitudes toward learning English, primarily through formal and informal language exposure and the availability of English literacy resources within the HLE (Lai et al., 2022; Xia, 2023). However, notable variations were observed, as indicated by large standard deviations, suggesting considerable diversity among the various home literacy environment components (e.g., formal, informal, and literacy resources). More studies are needed to explore the patterns of such differences and determine specific groups of parents, such as those in the Chinese mainland, who may find it more challenging to provide support for their children's English language learning in domestic settings (Butler, 2015a; Chen et al., 2022; Lai et al., 2022).

2.2. The impact of home literacy environment on preschoolers' English language learning attitudes

Based on the existing body of research, it is reasonable to posit that the beliefs parents hold regarding early childhood English education significantly impact their preschoolers' engagement and success in learning English. Nonetheless, in evaluating the effectiveness of English education, the perspectives of the children themselves about their learning process cannot be overlooked. Scholars have identified a multitude of factors that influence children's EFL acquisition. Among these, the diversity of their English learning experiences and environments plays a crucial role.

Drawing from the Home Literacy Model proposed by Sénéchal and LeFevre (2002) and Sénéchal (2006), depending on the availability of literacy resources, the HLE can be classified into formal and informal literacy settings. Specifically, the formal literacy environment involves activities centred on written language, wherein adults directly teach print-related skills like letter names and sounds. In contrast, the informal literacy environment emphasizes understanding and meaning in oral language, often manifested during shared reading sessions where adults focus on the meaning of the text. On the other hand, literacy resources encompass tools or materials that support literacy development by building the skills of reading, writing, speaking, and comprehension. These resources, which include books, newspapers, educational software, and digital devices, play a vital role in education by providing essential materials to enhance literacy abilities (Lai et al., 2022).

Prior research suggests that the varied beliefs held by parents contribute to the adoption of diverse HLE, encompassing both interactions and literacy resources. These elements collectively influence the English education of preschoolers, subsequently shaping their attitudes toward learning English (Choi et al., 2020b). Furthermore, Tong et al. (2021) conducted a research study about Chinese parents who had limited English proficiency and found that when these parents engaged in English-focused literacy activities at home, their engagement in helping their

children to be English learners increased. Consequently, their first-grade children displayed heightened enthusiasm for learning the English language.

Additionally, Hu (2021) underscored the importance of learners' attitudes toward the target language, asserting that these attitudes significantly contribute to and motivate their language learning process. Hu et al. (2022) claimed that attitude is not a process or behaviour that is permanent or resistant to change. It suggests that students' attitudes could be changed directly or indirectly through studying, observing, experience and study environments. Moreover, depending on response type, past research has classified attitudes into three categories: cognitive, emotional, and behavioural (Heng & Karpudewan, 2015). Cognitive attitudes are defined as one's beliefs and perceptions; affective attitudes are defined as one's feelings about the evaluation; and behavioural attitudes are defined as one's behaviour about the subject matter (Ajzen, 2005). In this perspective, three components of attitudes are shown as separate entities; hence, considering attitudes as cognitive, emotional, or behavioural constructs does not fully reflect the whole concept (Heng & Karpudewan, 2015; Oskamp & Schultz, 2005).

2.3. The parents' beliefs, home literacy environment, and preschoolers' English learning attitudes

Drawing from current research, it is plausible to infer that PB about early English education in childhood impact the English learning outcomes of preschoolers. Notably, Some researchers have argued that HLE is a higher mediator of the relationship between PB and children's attitudes to language learning. For example, Froiland et al. (2013) found that parents with positive attitudes toward their children's English language learning in kindergarten were likelier to share book readings with children and provide more robust literacy resources, like books, at home. Thus, variation in HLE derived from shared book reading frequency and the amount of children's learning materials in the home significantly predicted both children's motivation to learn and academic achievement.

Similarly, Lau and Richards (2021) explored mothers' beliefs regarding their children's early English learning experiences, focusing on the age range of 3.5 to 5.5 years. When questioned about the reasons for initiating English learning before primary school, the mothers articulated their positive views on the significance and value of English as a global language for their children's education and future career prospects. Additionally, they deemed it crucial to introduce English learning at home, emphasizing that an earlier start to learning English is advantageous. The mothers further expressed the belief that engaging in playful learning activities at home can foster the interest of preschoolers in the language.

Considering that PB directly mold the HLE (Lai et al., 2022) and indirectly impact preschoolers' learning attitudes (Altun, 2019; Choi et al., 2020a; Luo et al., 2021), it is imperative to conduct an in-depth exploration of the mediating role of HLE in this dynamic. Investigating this mediation pathway is indispensable for elucidating the complex interactions among these factors, specifically the nuanced underlying mechanisms through which PB translate into preschoolers' learning attitudes amid complex early educational environments.

2.4. The current study

The advancement of a coherent theoretical model represents a critical step in synthesizing the diverse insights gained from its literature review and aligning them with this study's empirical goals. Drawing on the foundational theories of Walker's (2005) framework on Parental Involvement and Home Literacy Model proposed by Sénéchal and LeFevre (2002) and Sénéchal (2006), the model aims to articulate how these layered influences converge to shape preschoolers' attitude on English learning.

The development of this model is predicated on the notion that learning is a multifaceted process influenced by an interplay of individual, social, and contextual factors. These factors do not exist in isolation but interact within a dynamic system that affects and is affected by the learner. Therefore, the model is designed to capture these interactions, providing a structured way to understand how external variables such as parental beliefs, social interactions, and cultural tools impact preschoolers' learning attitudes and, consequently, their language development. As depicted in Figure 1, this study regards parental belief as the independent variable, and formal English learning, informal English learning, English learning resource as mediator, affective, cognitive, behavioural as the dependent variables.

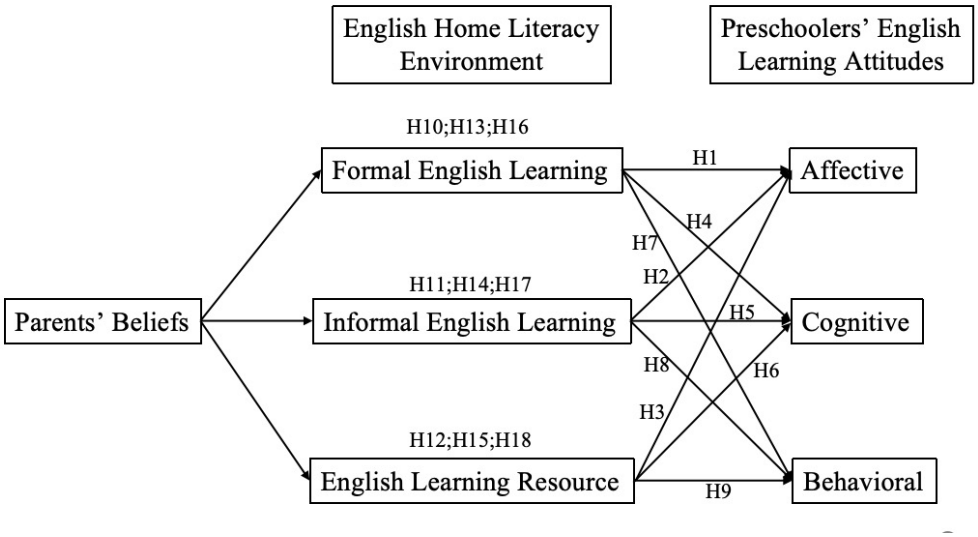

Figure 1: A model illustrating the interconnections between the PB, HLE, and preschoolers' attitudes toward learning English

Given the limited research scope regarding HLE in the EFL setting and its effect on preschoolers' attitudes to English language learning, this study intended to examine the potential relationship among the three factors: (a) PB regarding early childhood English education, (b) the English HLE for preschoolers, and (c) preschoolers' attitudes toward English learning. To achieve this objective, we proposed the following two research questions:

1. Does the home literacy environment, characterized by formal and informal English learning practices and the availability of English learning resources, affect

preschoolers' affective, cognitive, and behavioural attitudes toward English learning?
To achieve this study's aim of Question 1, a three-dimensional conceptualization of attitudes was used to measure preschoolers' attitudes to English language learning. Hypotheses were then formulated:
H1: Formal English learning positively influences preschoolers' affective attitude towards English learning.
H2: Informal English learning positively influences preschoolers' English learning affective attitude.
H3: English learning resources positively influence preschoolers' English learning affective attitude.
H4: Formal English learning positively influences preschoolers' English learning cognitive attitude.
H5: Informal English learning positively influences preschoolers' English learning cognitive attitude.
H6: English learning resources positively influence preschoolers' English learning cognitive attitude.
H7: Formal English learning positively influences preschoolers' English learning behavioural attitude.
H8: Informal English learning positively influences preschoolers' English learning behavioural attitude.
H9: English learning resources positively influence preschoolers' English learning behavioural attitude.

2. Does the home literacy environment, characterized by formal and informal English learning practices and the availability of English learning resources, mediate the effect of parents' beliefs on preschoolers' affective, cognitive, and behavioural attitudes toward English learning?
The following hypotheses were formulated in the context of this research question 2:
H10: Formal English learning mediates the relationship between parental beliefs and preschoolers' English learning affective attitude.
H11: Informal English learning mediates the relationship between parental beliefs and preschoolers' English learning affective attitude.
H12: English learning resources mediate the relationship between parental beliefs and preschoolers' English learning affective attitude.
H13: Formal English learning mediates the relationship between parental beliefs and preschoolers' English learning cognitive attitude.
H14: Informal English learning mediates the relationship between parental beliefs and preschoolers' English learning cognitive attitude.
H15: English learning resources mediate the relationship between parental beliefs and preschoolers' English learning cognitive attitude.
H16: Formal English learning mediates the relationship between parental beliefs and preschoolers' English learning behavioural attitude.
H17: Informal English learning mediates the relationship between parental beliefs and preschoolers' English learning behavioural attitude.
H18: English learning resources mediate the relationship between parental beliefs and preschoolers' English learning behavioural attitude.

3. Methods

3.1 Participants

In this study, purposive sampling was utilized to select potential respondents from 14 administrative regions within Zhengzhou, China. This technique mirrors approaches adopted in earlier studies focusing on the English language acquisition of preschool-aged children, as documented by Xia (2023). The inclusion of participants was contingent upon two prerequisites: first, the individual must be parenting one or more children within the age range of three-six years; second, they must have facilitated their child's or children's acquisition of English, irrespective of the setting or time frame. Survey questionnaires offer distinct advantages, including cost-effectiveness and time efficiency, as they can collect data from large, geographically dispersed samples quickly and inexpensively (Dillman et al., 2014; Groves et al., 2009). Additionally, the anonymity afforded by surveys can reduce social desirability bias, leading to more candid responses (Tourangeau et al., 2000). The sample size for this analysis was 385, as recommended by Krejcie and Morgan (1970). As suggested by Kirchherr and Charles (2018), since data collection was conducted using an online questionnaire, the larger the sample size, the better to minimise potential skewness.

The survey was distributed via the popular Chinese social media platform called *Wenjuanxing*, which is renowned for high response rates, lower sample homogeneity, and the ability to counteract common method bias effectively (Fan et al., 2023). *Wenjuanxing* contained data from the Chinese population census as of 1 January 2024, and remained accessible to us for a span of four weeks. Within this timeframe, we successfully collected responses from 439 parents and guardians. However, 3% of these were excluded for not meeting the study criteria. The issue of missing data was minor, with a 97% to 100% completion rate, leading to list-wise deletion of incomplete responses. Confidentiality agreements assured respondents that their data would be used solely for research purposes (Babbie, 2016).

3.2. Measures

In our study, participants, by filling out a survey, provided information on both themselves and their preschool-aged children, including their early childhood English education beliefs, the literacy environment at home, and their child's attitudes toward English learning (refer Appendix 1). The research utilized the following instruments:

3.2.1. Parents' beliefs about early childhood English education

The PB scale was adapted from prior Chinese studies by Lai et al. (2022) and Zhang and Lau (2022). It includes 11 items divided into two subscales: the value of early childhood English education, and parental involvement in the child's English education. The first subscale focuses on parents' values toward English education, reasons for investment, its global significance, and future advantages. The second subscale evaluates parents' involvement in their child's English learning through activities, resource provision, and engagement. Respondents scored each item on a five-point Likert scale (e.g., 1 = Strongly Disagree, 5 = Strongly Agree), with high scores indicating high PB in the importance of early English acquisition and the

necessity of involvement. Both subscales showed internal consistency above the acceptable 0.70 threshold.

Table 1: Assessment tools for evaluating PB on early English learning among preschoolers

Subfactor	No. of items	Item context (example)	Cronbach's α
PB about Early Childhood English Education (PBEC)	8	"I believe that English learning should start early in my child's education"	0.71
PB about their Involvement in Child's English Education (PBPI)	3	"I believe I play an important role in my child's English learning"	

3.2.2. English home literacy environment

The respondents in this study detailed their home environment for English language learning, including how often their children engage in English activities at home. This assessment used a 17-item scale drawn from earlier studies (Forey et al., 2016; Luo & Richards, 2021), which was categorized into three subscales: formal English learning activities (7 items), informal English learning activities (7 items), and available English learning resources (3 items) (refer to Table 2 for more details). Participants expressed their agreement with each statement using a five-point Likert scale (ranging from 1 = Never to 5 = Very Often). Higher scores indicate a more enriched English HLE provided by parents. For the variables, the Cronbach's alpha value was 0.77.

Table 2: Scale for English home literacy environment

Subfactor	No. of items	Item context (example)	Cronbach's α
Formal English learning	7	"Enrol my child for English enrichment after-school programmes (e.g., English playgroups, tutorial classes)"	0.77
Informal English learning	7	"Name objects or draw things with my child using English words"	
English learning resource	3	"Provide my child with English text materials (e.g., English or Chinese-English bilingual books, flashcards, workbooks) "	

3.2.3. Preschoolers' attitudes toward English learning

The 23-item scale assessing preschoolers' attitude toward English learning was adapted from Bratož et al.'s (2021) LANGattMini Scale, Choi et al.'s (2020b) scale for preschoolers' English activity preferences and learning motivation, and Gardner's (2004) attitude/motivation test battery: International AMTB research project. Part 1 contains nine items evaluating the child's liking for English learning (affective dimension), Part 2 includes three items assessing the child's evaluative beliefs about English learning (cognitive dimension), and Part 3 involves 11 items measuring the child's behavioural tendencies to learn English (behavioural dimension). This study used a five-point Likert scale from 'Strongly Disagree' to 'Strongly Agree.' Higher

scores reflect preschoolers' more favourable attitudes toward English learning. Table 3 shows the scale reliability, indicated by Cronbach's α, along with detailed descriptions of the item-scale constructs.

Table 3: Scale for preschoolers attitudes toward English learning

Subfactor	No. of items	Example of Item	Cronbach's α
Affective attitudes	9	"My child enjoys learning English"	.80
Cognitive attitudes	3	"My child believes English is useful for solving problems"	
Behavioural attitudes	11	"My child enjoys showing off to his friends or family new things he has learnt in English"	

3.3. Procedure

Upon developing the questionnaire, it was translated into Chinese. Following Hair et al.'s (2021) recommendation, translation accuracy was ensured through the back-translation method by two bilingual translators. Subsequently, the draft underwent review by three experts in early childhood education, English language education, and research methodology, respectively, leading to minor revisions. Feedback was then solicited from five Chinese parents of preschool English learners, focusing on the questionnaire's presentation and clarity. A pilot test with 60 participants confirmed the questionnaire's reliability ($\alpha \geq 0.70$). Following university ethics approval, the final questionnaire was distributed online in Zhengzhou, with most respondents completing it within 10 to 15 minutes.

4. Data Analysis and Results

The participants' demographic information was analysed using descriptive statistics using IBM SPSS 26.0 statistical software. This study yielded 405 complete surveys: 223 (55.1%) from mothers, 126 (31.1%) from fathers, and 56 (13.8%) from other guardians. These respondents were collectively called 'parents' for our analysis, constituting the analytical sample. Profiles are shown in Table 4.

Table 4: Participant Demographics

Demographic Information	Frequency	Percentage
Child Gender		
Male	224	55.3%
Female	181	44.7%
Child' Age		
3 years	92	22.7%
4 years	204	50.4%
5 years	70	17.2%
6 years	39	9.7%
Parental Highest Education Qualification		
High school and below	43	10.6%
Vocational diploma	77	19.0%
Undergraduate (Bachelor's Degree)	245	60.5%
Postgraduates	40	9.9%
Family Annual Household Income Range		

Low- Income (< ¥ 150,000)	160	39.51%
Middle Income (¥ 150,000- ¥ 500,000)	230	56.79%
High Income (> ¥ 1,000,000)	15	3.70%

Based on the overview by Ringle et al. (2022), this study employed Partial Least Squares Structural Equation Modelling (PLS-SEM) using Smart PLS 4. This approach was specifically chosen for its robustness in handling non-normally distributed data—a common characteristic of survey research, as noted by Chin et al. (2003). First, to counteract potential common method bias arising from the use of a singular data source, we implemented the full collinearity testing protocol recommended by Kock and Lynn (2012) and further advocated by Kock (2015). This procedure entailed regressing the variables against a common factor, where a variance inflation factor (VIF) less than 3.3, indicated no significant bias. Our analysis, demonstrating a VIF below this benchmark, validates the data's integrity and confirms that single-source bias did not substantially compromise our findings.

4.1. Common method variance

Two statistical techniques were used to assess the common method variance (CMV) as this survey was cross-sectional. Firstly, based on the Harman one-way test, the results showed that the variance explained by the first component was 23.647% (<50%) (Podsakoff et al., 2012). Furthermore, in Table 5, the complete findings from the full covariance test indicated Variance Inflation Factor (VIF) values varied from 1.693 to 2.811 (<3.33; Kock, 2015), indicating that this study's data did not have significant CMV.

4.2. Measurement model

Following Ramayah et al. (2018) and Hair et al. (2022), a two-step method was used for the PLS-SEM analyses. First, the validity and reliability of the measurement models were confirmed. The loads, CA, CR, and AVE, were above the recommended values of 0.70 and 0.50 for all constructs (Hair et al., 2022). Thus, our findings met these thresholds, as indicated in Table 5.

Table 5: Measurement model

Constructs	Items	Indicator Reliability	Full Collinearity	Internal Consistency Reliability		Convergent Validity
		Outer Loadings	VIF	CA	CR	AVE
		>0.70	**<3.33**	**> 0.70**	**>0.70**	**>0.50**
Parents' Beliefs (PB)	PB1	0.816	2.001	0.905	0.921	0.518
	PB2	0.777				
	PB3	0.706				
	PB4	0.761				
	PB5	0.700				
	PB6	0.767				
	PB7	0.757				
	PB8	0.737				
	PB9	0.717				
	PB10	0.709				

Constructs	Items	Indicator Reliability	Full Collinearity	Internal Consistency Reliability		Convergent Validity
		Outer Loadings	VIF	CA	CR	AVE
		>0.70	<3.33	> 0.70	>0.70	>0.50
Formal English Learning (FEL)	PB11	0.707	2.247	0.916	0.933	0.665
	FEL1	0.810				
	FEL2	0.814				
	FEL3	0.818				
	FEL4	0.818				
	FEL6	0.829				
	FEL7	0.813				
Informal English Learning (IEL)	IEL1	0.796	2.013	0.897	0.919	0.619
	IEL2	0.767				
	IEL3	0.801				
	IEL4	0.721				
	IEL5	0.819				
	IEL6	0.810				
	IEL7	0.790				
English Learning Resource (ELR)	ELR1	0.857	1.937	0.834	0.933	0.751
	ELR2	0.878				
	ELR3	0.865				
Affective Attitude (AA)	AA1	0.795	2.187	0.926	0.938	0.627
	AA2	0.817				
	AA3	0.775				
	AA4	0.784				
	AA5	0.806				
	AA6	0.776				
	AA7	0.794				
	AA8	0.786				
	AA9	0.792				
Cognitive Attitude (AC)	AC1	0.825	1.693	0.796	0.880	0.710
	AC2	0.847				
	AC3	0.855				
Behavioural Attitude (AB)	AB1	0.767	2.811	0.940	0.948	0.625
	AB2	0.787				
	AB3	0.783				
	AB4	0.797				
	AB5	0.792				
	AB6	0.779				
	AB7	0.813				
	AB8	0.791				
	AB9	0.810				
	AB10	0.786				
	AB11	0.788				

Notes: CA = Cronbach's α CR, CR = composite reliability, AVE = average variance extracted

Next, we evaluated discriminant validity through the HTMT criterion, as recommended by Henseler et al. (2015) and later refined by Franke and Sarstedt (2019). According to the guideline, HTMT values should not exceed 0.85 for strict evaluation, with a more lenient threshold set at 0.90. Table 6 shows HTMT values below the rigorous threshold of 0.85, thus, this study concluded that the study

constructs were different. This evidence and other validity tests confirmed the validity and reliability of this study's measurement model.

Table 6: Discriminant validity (HTMT<0.85)

Constructs	AA	AB	AC	ELR	FEL	IEL	PB
AA							
AB	0.471						
AC	0.542	0.535					
ELR	0.650	0.636	0.678				
FEL	0.570	0.580	0.640	0.484			
IEL	0.537	0.668	0.627	0.486	0.550		
PB	0.590	0.615	0.630	0.652	0.644	0.655	

Notes: PB-> Parents' Beliefs, FEL-> Formal English Learning, IEL-> Informal English Learning, ELR-> English Learning Resource, AA->Affective Attitude, AB-> Behavioural Attitude, AC-> Cognitive Attitude

4.3. Structural model

By analysing any possible collinearity between the predictors, we evaluated the structural model. In Table 7, all combination pathways had VIF values between 1.313 and 1.435 (<3.33; Hair et al., 2022). Therefore, covariance was not a problem in this study's data. Then, we employed a bootstrap method with 10,000 resamples in the structural model analysis to determine path coefficients, standard errors, t-values, and p-values (Ramayah et al., 2018). Additionally, we employed various criteria, including p-value, confidence intervals, and effect size, by addressing the criticisms of Hahn and Ang (2017) regarding the limitations of p-values for hypothesis significance testing.

First, we examined the direct effects of three HLE factors on affective attitudes. The R^2 value was 0.455 (Q^2 = 0.281), which suggests that all three predictors explained 45.5% of the variance in affective attitude. Notably, Formal English Learning (β = 0.270, p < 0.01), Informal English Learning (β = 0.197, p < 0.01) and English Literacy Resources (β = 0.376, p < 0.01) were all significantly and positively correlated with Affective Attitude; thus, H1, H2, and H3 were supported. Following this, we examined the effects of the three predictors on cognitive attitudes, resulting in an R^2 of 0.470 (Q^2 = 0.329), indicating that three predictors explained 47.0% of the variance in cognitive attitudes. Formal English Learning (β = 0.283, p < 0.01), Informal English Learning (β = 0.252, p < 0.01) and English Literacy Resources (β = 0.327, p < 0.01) were all significantly and positively correlated with Cognitive Attitude; therefore, H4, H5 and H6 were accepted. Finally, we tested the effect of the three predictors on Behavioural Attitude, with an R^2 of 0.528 (Q^2 = 0.324) demonstrating that three predictors explained 52.8% of the variance in Behavioural Attitude. Formal English Learning (β = 0.220, p < 0.01), Informal English Learning (β = 0.374, p < 0.01) and English Literacy Resources (β = 0.316, p < 0.01) were all significantly and positively related to Behavioural Attitude, thereby supporting H7, H8, and H9.

This evidence affirms that formal and informal learning activities, along with literacy resources, exert a positive influence on preschoolers' affective, cognitive, and behavioural attitudes toward EFL learning. Table 7 illustrates a summary of the criteria used to test direct hypotheses.

Table 7: Hypothesis testing: Direct effects

Path Hypothesis Variable Relationship	Path Coefficient Beta (β)	Standard Deviation (STDEV)	TStatistics (|O/STDEV|)	*P*Values	Bootstrapped CI BC 5% LL	95% UL	VIF	f^2	Decision
H1 FEL -> AA	0.270	0.046	5.834	p < .001	0.196	0.349	1.435	0.094	Supported
H2 IEL -> AA	0.197	0.052	3.801	p < .001	0.108	0.279	1.430	0.050	Supported
H3 ELR -> AA	0.376	0.047	7.997	p < .001	0.295	0.450	1.313	0.198	Supported
H4 FEL -> AC	0.283	0.044	6.477	p < .001	0.213	0.356	1.435	0.106	Supported
H5 IEL -> AC	0.252	0.042	6.021	p < .001	0.182	0.320	1.430	0.084	Supported
H6 ELR -> AC	0.327	0.039	8.465	p < .001	0.261	0.387	1.313	0.154	Supported
H7 FEL -> AB	0.220	0.044	4.891	p < .001	0.146	0.293	1.435	0.072	Supported
H8 IEL -> AB	0.374	0.044	8.513	p < .001	0.299	0.444	1.430	0.207	Supported
H9 ELR -> AB	0.316	0.042	7.574	p < .001	0.246	0.383	1.313	0.161	Supported

	R^2	Q2_predict
Formal English Learning (FEL)	0.347	0.228
Informal English Learning (IEL)	0.347	0.212
English Learning Resource (ELR)	0.322	0.238
Affective Attitude (AA)	0.455	0.281
Cognitive Attitude (AC)	0.470	0.329
Behaviour Attitude (AB)	0.528	0.324

Notes: 1. We use 90% confidence interval with a bootstrapping of 5,000.

Table 7 shows the effect sizes (f^2), in order to assess the relevance of each path. H3 (f^2 = 0.198), H6 (f^2 = 0.154), H8 (f^2 = 0.207), and H9 (f^2 = 0.161) exhibited a medium effect size, according to the results of the postulated path. The routes proposed by Hair et al. (2022) for H1 (f^2 = 0.094), H2 (f^2 = 0.050), H4 (f^2 = 0.106), H5 (f^2 = 0.084), and H7 (f^2 = 0.072) all showed modest but significant effect sizes. Finally, this study employed the PLS prediction method to assess the predictive significance of the model (Chin et al., 2020). The model's predictive significance was shown by the Q^2predict values for the endogenous constructs in Table 7 being greater than zero.

Moreover, we propose PLS-Predict as Shmueli et al. (2019) suggested. It retained a sample-based procedure that used PLS-Predict to generate item- or construct-level case predictions by checking predictive relevance through a 10-fold procedure. Shmueli et al. (2019) concluded that the predictive power is strong if all item variances (PLS-LM) are lower than the LM model. The predictive relevance is not confirmed if all item variances are higher than the LM model. The predictive power is moderate if most of the item variances are lower than the LM model, and the predictive power is low if a few of the item variances are lower than the LM model. Table 8 shows that the PLS model's errors were all lower than the LM model's. Thus,

our model has strong predictive power. Therefore, we extended the prediction technique by evaluating the endogenous items of preschoolers' attitudes toward English learning attitudes and showed solid predictive relevance.

Table 8: PLS-Predict

Item	Q^2_predict	PLS-SEM_RMSE	LM_RMSE	PLS-LM
AA	0.196	1.186	1.208	-0.022
AC	0.199	0.926	0.940	-0.014
AB	0.200	1.135	1.136	-0.001

Notes: RMSE stands for Root Mean Square Error; LM represents a linear model; AA->Affective Attitude, AC-> Cognitive Attitude, AB-> Behavioural Attitude

To examine the mediation hypothesis, we used bootstrapping for indirect effects as suggested by Preacher and Hayes (2004, 2008). A significant mediation effect exists if the confidence interval does not cross the null. In Table 9, the effect of PB on preschoolers' Affective Attitude toward English learning is significantly mediated by Formal English Learning ($\beta = 0.153$, $p < 0.01$), Informal English Learning ($\beta = 0.111$, $p < 0.01$), and English Learning Resources ($\beta = 0.205$, $p < 0.01$). Likewise, PB influence on preschoolers' Cognitive Attitude toward English learning was observed to be significantly mediated by Formal English Learning ($\beta = 0.160$, $p < 0.01$), Informal English Learning ($\beta = 0.142$, $p < 0.01$), and English Learning Resources ($\beta = 0.178$, $p < 0.01$). Finally, Formal English Learning ($\beta = 0.124$, $p < 0.01$), Informal English Learning ($\beta = 0.210$, $p < 0.01$), and English Learning Resources ($\beta = 0.172$, $p < 0.01$) were all found to significantly mediate the impact of PB on preschoolers' Behavioural Attitude toward English learning. The bias-corrected 95% confidence intervals also did not cross the zero point, thus confirming our findings and supporting H10 through H18. We conclude that the HLE mediates the relationship between PB and preschoolers' Affective, Cognitive, and Behavioural attitudes toward English learning. This mediating role is achieved through formal and non-formal learning activities and the availability of literacy resources.

Table 9: Hypothesis testing: Indirect effects

Path Hypothesis Variable Relationship	Path Coefficient Beta (β)	Standard Deviation (STDEV)	TStatistics (|O/STDEV|)	*P*Values	Bootstrapped CI BC 5% LL	Bootstrapped CI BC 95% UL	Decision
H 10 PB->FEL->AA	0.153	0.031	4.988	p < .001	0.107	0.204	Supported
H 11 PB->IEL->AA	0.111	0.030	6.786	p < .001	0.061	0.165	Supported
H 12 PB->ELR->AA	0.205	0.205	6.786	p < .001	0.152	0.249	Supported
H 13 PB->FEL->AC	0.160	0.028	5.624	p < .001	0.115	0.200	Supported
H 14 PB->IEL->AC	0.142	0.026	5.510	p < .001	0.105	0.186	Supported
H 15 PB->ELR->AC	0.178	0.024	7.505	p < .001	0.140	0.219	Supported
H 16 PB->FEL->AB	0.124	0.026	4.803	p < .001	0.083	0.173	Supported
H 17 PB->IEL->AB	0.210	0.029	7.239	p < .001	0.164	0.258	Supported
H 18 PB->ELR->AB	0.172	0.025	6.827	p < .001	0.132	0.213	Supported

Note: 1. We use 95% confidence interval with a bootstrapping of 5,000; 2. PB-> Parents' Beliefs, FEL-> Formal English Learning, IEL-> Informal English Learning, ELR-> English Learning Resource, AA->Affective Attitude, AC-> Cognitive Attitude, AB-> Behavioural Attitude

5. Discussion and Conclusion

This research has examined the complex relationships among PB, the HLE, and preschoolers' attitudes toward EFL learning in China. In order to answer the first research question, our investigation underscores the distinct intermediary functions of various HLE components—formal English learning, informal English learning, and English learning resources—in crafting preschool-aged children's emotional, cognitive, and behavioural attitudes toward EFL. The findings indicate the positive impact of each HLE aspect on preschoolers' engagement and motivation in learning EFL. Notably, English language resources significantly enhance positive attitudes toward EFL across cognitive, affective, and behavioural dimensions, underscoring the essential role of a diverse array of learning materials.

Contrary to earlier suppositions, our study reveals that formal and informal English learning activities influence learning attitudes to a similar extent, suggesting an innovative formal learning paradigm that incorporates interactive components reminiscent of informal learning. Previous research has established that language acquisition necessitates bidirectional interactions, suggesting that formal education might not be the most suitable approach for preschoolers, who benefit from implicit learning processes (Luo et al., 2021). Despite this, our study discovered a statistically significant correlation between formal English instruction and preschoolers' cognitive attitude toward English learning. With educational practices continually advancing, there is an increased focus on the importance of structured instruction in subjects such as English for shaping preschoolers' cognitive attitude.

Echoing Cha and Kim (2013) and Ham (2015), our research found that informal strategies have an inverse relationship with children's apprehension about learning English. These patterns suggest that when parents foster informal learning activities, such as singing English songs or visiting bookstores or libraries with their children, the preschoolers become cognizant of parental support and demonstrate a willingness to engage in these informal learning activities.

To address the second research question: "Does the home literacy environment, characterized by formal and informal English learning practices and the availability of English learning resources, mediate the effect of parents' beliefs on preschoolers' affective, cognitive, and behavioural attitudes toward English learning?", the mediation analysis underscored the notable indirect influence of PB on preschool-aged children's attitudes toward English learning through the HLE components, each exhibiting a distinct level of impact. This outcome illustrates that the linguistic educational experience and environment at home serves as a significant mediator between two psychological constructs: PB and children's multifaceted attitudes toward learning (Davis-Kean, 2005; 2021; Lerner & Grolnick, 2020). More specifically, English learning resources were identified as exceptionally impactful, indicating that such resources are crucial in nurturing positive attitudes toward English learning, arguably exceeding the influence of formal or informal learning activities when considered independently. Through engagement with audiovisual materials, parents can cultivate children's interests toward learning (Altun, 2017, 2019). Moreover, informal English learning exerts a significant positive effect on preschoolers' behavioural attitudes toward English learning, as highlighted by Gai (2019), where learners exhibit increased interest in interactive activities such as role-playing and games.

This study deeply analysed the significant impact of PB and HLE on Chinese preschoolers' engagement and motivation in EFL learning. It highlights a shift toward home-based learning as a vital educational method, pointing to the critical role of parents in early EFL learning experiences.

5.1 Implications of findings

This study has produced two principal findings. Initially, significant correlations emerged between the HLE and preschoolers' attitudes toward EFL learning. Future research has shown that HLE mediates the relationship between PB, the educational significance of English, and preschoolers' attitudes toward learning English. The present study identifies some theoretical and practical implications to help preschool EFL learners enhance their learning motivation.

This research contributes significantly to the expansion and application of key theoretical frameworks within the context of EFL education, specifically among preschool-aged children in China. By integrating insights from the Parental Involvement Theory (Walker et al., 2005) and Home Literacy Model (Sénéchal, 2006; Sénéchal et al. 2017), this study illuminated the complex interactions between home environment factors and preschool children's attitudes toward English learning. As for the influence of Parental Involvement Theory, according to Walker et al. (2005),

parental involvement is crucial in shaping educational outcomes. This research supports and extends this theory by demonstrating that parental involvement in EFL learning is not merely beneficial but essential. The indirect effects of PB on children's attitudes toward English, mediated through the HLE, highlight the nuanced ways in which parents contribute to or detract from effective language learning. Furthermore, this study enhances the Home Literacy Model proposed by Sénéchal (2006) and expanded by Sénéchal et al. (2017). It tests the model's applicability in an English language setting, providing a detailed and nuanced insight into how various dimensions of HLE promote early English language learning. The findings suggest that the model needs to accommodate variations in cultural and linguistic contexts to fully capture the dynamics of language learning outside of first language environments.

In terms of the practical implication, the results indicate that educational frameworks should adapt to enhance support for home-based learning contexts, particularly by equipping parents with essential resources and directives to conduct efficacious EFL teaching. Parents play a pivotal role in molding the EFL learning atmosphere. Thus, involving parents in knowledgeable dialogue about proficient EFL learning tactics and harmonizing teaching methods and HLE with parental anticipations is essential. This interactive method extends the learning journey and ensures home language instruction is guided by a collective vision of goals and techniques. Provision of virtual workshops, digital materials, and community forums would empower parents with the means and understanding necessary to effectively contribute to their children's linguistic education. This concerted approach strives to blend the educational continuum that connects home and formal learning spheres, bolstering language abilities with regularity.

5.2 Limitations and future research directions

This investigation, which was contextualized within a specific cultural milieu and depended on self-reported accounts, may be constrained in terms of its wider applicability and precision. Furthermore, the cross-sectional methodology of this research inhibits definitive conclusions about the causal links among PB, the HLE, and preschoolers' attitudes toward English learning. Subsequent inquiries should utilize longitudinal frameworks to chronicle the evolution of involvement and interest in EFL education over extended periods and within varied cultural landscapes. Moreover, qualitative exploration could unveil richer perspectives on the perceptions and strategies of parents and children regarding the EFL educational experience at home. Finally, this study suggests that ELL resources, such as technology integration and digital literacy, significantly affect children's learning attitudes. However, this study did not explore the role of any digital tools and resources in home literacy settings and their effects on children's English language development. Future research should concentrate on how parents guide children's use of digital resources for English language learning and the resulting impact on learning outcomes. This line of inquiry would provide valuable insights for parents.

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