

Examining Parent Reading Belief Inventory (PRBI)'s Factor Structure: With A Sample of Chinese Parents: Caveats and Modification*

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Abstract: Previous studies about the Parent Reading Belief Inventory (PRBI) have shown discrepant results and have primarily focused on the western hemisphere. The present study aims to explore the fundamental factor structure of the PRBI and re-examine the reliability and validity in a large number of Chinese parents in southern China, expecting to show a multifaceted structure of parental reading belief from diverse socioeconomic status (SES). The significance of this study is underscored by its potential to provide a more culturally sensitive and contextually relevant measure of parental reading beliefs, which can contribute to a better understanding of literacy practices in the Chinese context. PRBI was first introduced by DeBaryshe and Binder (1994) to assess parents' reading perception, attitude, value, and belief, which is a 42-item instrument composed of 7 subscales. Given the cultural disparities in parenting beliefs, linguistic subtleties, item relevance, and the imperative for contextual adaptation, the original PRBI may not be directly applicable to the Chinese context and requires adaptation. To address this, the study recruited 1,656 parents to complete the PRBI inventory and Home Literacy Environment Questionnaire. The lack of validation for the core factor structure of the Western-focused PRBI warrants careful reconsideration and should be interpreted with caution as researchers in these studies failed to affirm the PRBI's reliability or validity for their specific cultural group. Therefore, the current study's revisions aim to address these issues, allowing for a more accurate assessment of parental reading beliefs among Chinese parents. Findings show that the original PRBI exhibited poor fit parameters using confirmatory factor analysis and thus

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was revised to an inventory with 33 items. This revision fills a needed gap to assess parents' reading belief in the Chinese context as an instrumental measure to examine parental involvement, early literacy practices, and perceptions on preschooler's shared-book reading experience and early language development.

Keywords: Preschooler, Parent Reading Belief, Scale Reliability, Socioeconomic Status (SES), Home Literacy Environments (HLEs)

父母閱讀信念量表（PRBI）的因素結構驗證分析：

以中國父母為研究樣本的量表修訂

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摘要：以往關於父母閱讀信念量表（PRBI）的研究主要集中在西方國家，並且呈現出不同的結果。本研究旨在檢驗 PRBI 量表不同維度的因素結構分析，同時通過大樣本的採集檢驗中國華南地區父母閱讀量表的信度與效度，以期揭示不同社經地位（SES）下父母閱讀信念的多維度結構分析結果。PRBI 由 DeBaryshe 和 Binder 在 1994 年首次提出，用於評估家長的閱讀感知、態度、價值觀和信仰，該工具共有四十二個項目，由七個分量表組成。本研究共招募 1656 位父母完成 PRBI 量表和家庭讀寫環境問卷。以西方父母為研究對象的父母閱讀信念量表（PRBI）缺乏對該量表的核心結構因素的驗證，應謹慎解讀其量表的合理性。再者，由於育兒觀念、語言細微差別、問卷項目相關性以及語境等方面的文化差異，以西方為中心的 PRBI 未必適用於中國語境，需進行修改。本研究的修訂旨在解決這些問題，以便更準確地評估中國父母的閱讀信念，並有助於更好地理解這種文化背景下的讀寫萌發。研究結果表明，原始 PRBI 在驗證性因數分析中表現出擬合度較差參數，因此根據研究結果將其修訂為包含三十三個項目的量表。同時，本研究及時填補中國文化背景和語境下研究工具量表的空白。該結合中國現實修訂的量表，即中國父母閱讀信念量表的研究工具，可作為檢視父母參與、早期識字實踐以及對學齡前兒童共用書籍閱讀體驗和早期語言發展看法的工具。最後，本文討論該研究存在局限性和影響。

關鍵詞：學齡前兒童、父母閱讀信念、量表信度、社經地位(SES)、家庭讀寫環境(HLE)

1. Introduction

Parent literacy beliefs are defined by Sigel and McGillicuddy-De Lisi as identifiable behaviors of parents that are most directly manifested in childrearing and parenting practices, such as parent-child interactions and support for home literacy environment, which are greatly influenced by parents' historical and cultural norms.¹ According to the Home Literacy Model, which was first proposed by Sénéchal & LeFevre,² a home literacy environment includes formal and informal literacy experiences. In particular, formal literacy experiences refer to those activities that are related to emergent literacy and the focus is on the print itself, aiming to facilitate children's acquisition of print concepts, while informal literacy experiences are those involving parent-child book reading or storybook exposure with the print in the books but not the focal point of interaction between parents and children. Chen et al. extended the Home Literacy Model to their research in Guangzhou, a metropolitan city in the southern part of China, where few studies have been done and produced consistent research findings.³ To be more specific, they argue that formal literacy experiences, such as knowledge about alphabet, word reading and word spelling facilitate children's acquisition of print-specific skills. In addition, such informal literacy experiences have a positive correlation with children's knowledge of vocabulary.

The significance of parental reading belief to the extent of enriched home literacy environment and to preschoolers' literacy development has been well documented in a myriad of research. For instance, DeBarshe claimed that the social demographic characteristics of the home, namely, parental socioeconomic status and parents' literacy habits are highly associated with parental reading belief.⁴ That is to say, when parents

¹ Sigel, I. E., & McGillicuddy-De Lisi, A. V., "Parent Beliefs are Cognitions: The Dynamic Belief Systems Model," in M. H. Bornstein (Ed.), *Handbook of Parenting: Vol.3. Being and Becoming A Parent* (2nd ed.) Mahwah, NJ: Erlbaum, (2002): 485-508.

² Sénéchal, M., & LeFevre, J. A., "Continuity and Change in the Home Literacy Environment as Predictors of Growth in Vocabulary and Reading," *Child Development* 85.4(2014): 1552-1568.

³ Chen, X., Zhou, H., Zhao, J., & Davey, G. "Home Literacy Experiences and Literacy Acquisition Among Children in Guangzhou, South China," *Psychological Reports* 107(2010): 354-366.

⁴ DeBaryshe, D.B. "Maternal Belief Systems: Linchpin in the Home Reading Process'," *Journal of Applied*

possess higher reading abilities and literacy habits, alongside better parental socioeconomic status, the more enriched the home literacy environment their children would be exposed to and the more supportive and facilitative these parents would be. The essential role of the HLE, in preschoolers' emerging literacy and language skills is highlighted in the study of DeBarshe et al., which argues that children in the early years of language development may learn to actively engage in family literacy activities and thus gradually learn to explore and play with literacy materials, in particular, children learn to involve in parent-child book reading activities with highly supportive parents.⁵ Findings from the study conducted by Weigel et al. indicated that parental reading beliefs are highly predictive of parental literacy habits, parent-child literacy and language activities at home, all of which are positively correlated with children's print knowledge and reading interest.⁶ Likewise, Yeo et al. explored the association between the parents' reading beliefs, home literacy practices and HLE in a sample of 193 preschoolers aged six in Singapore and found that active parental involvement is the strongest predictor of HLE, among which parent-child engagement in reading and writing predicts both children's emerging reading skills and interest.⁷ This research also points out that in terms of parents' reading belief, parents' efficacy in facilitating children's development in literacy in early years is the strongest variable in predicting children's reading proficiency while parents affect and verbal participation positively predict children's reading interest. The vast substantial parents' reading belief results in significantly different HLEs, thus impacting preschoolers' malleability of early language development.⁸

Developmental Psychology 16.1(1995): 1-20.

⁵ DeBaryshe, B. D., Binder, J. C., & Buell, M. J., "Mothers' Implicit Theories of Early Literacy Instruction: Implications for Children's Reading and Writing," *Early Child Development and Care* 160(2000): 119-131.

⁶ Weigel, D. J., Martin, S. S., & Bennett, K. K., "Contributions of the Home Literacy Environment to Preschool-aged Children's Emerging Literacy and Language Skills." *Early Child Development and Care* 176.3-4 (2006): 357-378.

⁷ Yeo, L. S., Winston, W. O., & Charis, M. N., "The Home Literacy Environment and Preschool Children's Reading Skills and Interest," *Early Education & Development* 5.6(2014): 791-814.

⁸ Curenton, S. M., & Justice, L. M., "Children's Preliteracy Skills: Influence of Mothers' Education and Beliefs about Shared-reading Interactions," *Early Education & Development* 19(2008): 261-283.

DeBaryshe & Binder first assessed the psychometric properties of the instrument named PRBI in 155 mothers of low Socioeconomic Status families from African America and Euro-America, more specifically, African American accounts for 63% while single-parent families constitute 77%.⁹ According to the research, this inventory represents a unitary instead of a multifactor structure because parents perceive all aspects of early reading practices as highly related. Rodriguez et al. echo this research result, adding more support for the inventory as a tool of reading belief. Five of the seven subscales are well established, leaving only Reading Instruction and Environmental Input with poor coefficient alphas and component loadings.¹⁰ Also, both Radišić & Ševa and Dhima claim this adaptive inventory is an adaptable and satisfyingly reliable instrument with good metric measures to assess Serbian and Albania parents' reading beliefs respectively.¹¹

Wu & Honig first translated the PRBI into Putonghua, namely Mandarin, with 888 well-educated middle SES Taiwanese mothers, which remains the first attempt at the application of the PRBI in the Chinese context and this research found that maternal reading beliefs have a close correlation with family income, maternal educational attainment and early family literacy practices.¹² Nevertheless, it is important to note that Wu and Honig did not undertake a confirmatory factor analysis (CFA) to validate the proposed core factor structure of the original PRBI. Thus, this cross-cultural attempt still needs more examination and could not be generalized to the Chinese context because of this methodological caveat.

⁹ DeBaryshe, B. D., & Binder, J. C., "Development of an Instrument for Measuring Parental Beliefs About Reading Aloud to Young Children," *Perceptual and Motor Skills* 78(1994): 1303-1311.

¹⁰ Rodriguez, B. L., Hammer, S. C., & Lawrence, F. R., "Parent Reading Belief Inventory: Reliability and Validity With a Sample of Mexican American Mothers," *Early Educational Development* 50(2009): 826-844.

¹¹ Radišić, J., & Ševa, N., "Exploring the Factor Structure of the Parent Reading Belief Inventory (PRBI): Example of Serbia," *PSIHOLOGIJA*, 46(2013): 315-330; Dhima, S. Parent Reading Belief Constructing Home Literacy Environment. The 2nd International Conference on Research and Education - "Challenges Toward the Future" (ICRAE2014), 30-31 May 2014, Shkodra, Albania: University of Shkodra "Luigj Gurakuqi". Retrieved from <http://konferenca.unishk.edu.al/icrae2014/cd/pdfdoc/688.pdf>.

¹² Wu, C. C., & Honig, A. S., "Taiwanese Mothers' Beliefs about Reading Aloud with Preschoolers: Findings from the Parent Reading Belief Inventory," *Early Child Development and Care* 180(2010): 647-669.

On the contrary, Gonzales et al. discovered the PRBI's inadequate model fit, with only two subscales (Reading Instruction and Resources) showcasing good fit parameters.¹³ In particular, they also argue that PRBI fails to explore parents of diverse socioeconomic status, cultural and linguistic backgrounds in different families. However, it should be noted that Gonzales et al. sample only includes 136 parents with a diverse ethnic background (48.9% Hispanic American, 31.6% African American, 15% White, 3% Asian, 1.5% other) who are mainly from low SES families. Considering the small sample size of participants, the validity of its research result remains rather weak and warrants continued investigation.

It is important to note that parental reading beliefs and early literacy practices among families from diverse socioeconomic status (SES) backgrounds are under-researched within the Chinese context. The lack of a reliable instrument to assess this domain led to scarce studies on this subject. With the prior studies which are either predominantly Caucasian or low SES samples from the Western hemisphere, it is far from enough to draw definitive conclusions and claim that PRBI serves as a good instrument to measure Chinese parent's reading perceptions and attitudes since it remains unknown that whether the PRBI could appropriately match the Chinese parents' reading belief. To the author's knowledge, no authors have made any attempts so far to explore the PRBI in the Chinese mainland. Hence, considering the inconsistencies and discrepant results in all the studies mentioned above, it is unclear whether the original PRBI varies cross-culturally or by various SES.

Therefore, this current study is a continued replication of PRBI underlying factor structure with a much bigger sample of participants with various Social Economic Status (SES) in the Chinese context, aiming to examine the reliability and validity of the inventory and hopefully provide a valid instrument for Chinese practitioners and researchers to explore the relationship between the parents reading belief and emergent literacy. To be more specific, the purpose of this study is to (a) examine the factor structure of the entire PRBI to validate the reading inventory, (b) explore the correlation factors among the

¹³ Gonzalez, J. E., Taylor, A. B., Davis, M. J., & Kim, M., "Exploring the Underlying Factor Structure of the Parent Reading Belief Inventory (PRBI): Some Caveats," *Early Education and Development* 24(2013): 123-137.

inventory's seven subscales, (c) evaluate the validity in Chinese parents and examine the modification of the PRBI inventory.

2. Methodology

2.1 Ethical Considerations in Research with Parents and Preschoolers

When conducting research that involves parents and preschoolers, especially on sensitive topics such as socioeconomic status (SES), it is crucial to address ethical considerations thoroughly. Obtaining informed consent from all participants was a primary step, ensuring that parents were fully aware of the study's objectives, the extent of their participation, and their right to withdraw at any time without repercussions. This process safeguarded their autonomy and trust in the research process.

Furthermore, the researcher placed a high priority on maintaining the confidentiality and anonymity of the participants' data. This approach was essential for protecting the privacy of the families involved, which in turn, upheld the integrity and credibility of the research findings.

2.2 Participants

The purpose of the research is to explore the reading beliefs of parents whose children are aged 3-6 ($M=55$ months; $SD=11$ months). The author contacted the administrators of 8 kindergartens and clearly explained the research purpose while at the same time assuring the participants' anonymity, as well as guaranteeing the confidentiality of their data before the data collection process. The PRBI questionnaires were distributed online because of COVID-19. The participants in the present study are 1656 parents from various cities in the southern part of China and their children are enrolled in either public or private kindergartens. Data were collected from March 2021 to July 2021 simultaneously in 8 kindergartens.

Socioeconomic status (SES) is a multifaceted construct that encompasses a combination of factors such as family income, parents' education, and occupation.¹⁵ In this

study, SES is defined based on a combination of parents' income and educational attainment. Sénéchal also argued that SES may moderate the home literacy environment.¹⁶ Table 1 provides an overview of the family income distribution, which is a critical component of SES. As shown, a significant portion of the families have a per capita income below 5000 Yuan (30.5%), between 5000 to 10,000 Yuan (33.7%), and above 10,000 Yuan (35.8%). This distribution provides a clear picture of the economic diversity within the sample.

Table 1. Pre-schoolers Basic Information

Variables	Categories	Number and Percentage
Gender	Male	890 (53.7%)
	Female	766 (46.3%)
Class	K1	484 (29.2%)
	K2	688 (41.6%)
	K3	484 (29.2%)
One-child Family	Yes	448 (27.1%)
	No	1,208 (72.9%)
Family Income (per capita)	Below 3000 Yuan	121 (7.3%)
	3000-5000 Yuan	384 (23.2%)
	5000-10,000 Yuan	558 (33.7%)
	10,000-20,000 Yuan	385 (23.2%)
	20,000 Yuan	208 (12.6%)

Table 2. Parents' Educational Attainment

Educational Attainment	Fathers	Mothers
Middle School Diploma or Below	332 (20.0%)	347 (21.0%)
High School or Vocational Diploma	423 (25.6%)	408 (24.6%)
College Degree	353 (21.3%)	390 (23.6%)
Bachelor's Degree	485 (29.3%)	471 (28.4%)
Master or PhD Degree	63 (3.8%)	40 (2.4%)

The educational attainment of parents, as detailed in Table 2, is another key aspect of SES in this study. It is categorized into five distinct levels, reflecting a range of educational backgrounds. Notably, 54.4% of both fathers and mothers have achieved a college degree or higher, indicating a well-educated population of parents in the study.

The demographic shift towards families with multiple children is also noteworthy. The majority of the preschoolers in this study come from families with siblings (N=1208, 72.9%), a trend that aligns with China's policy changes, which ended the one-child policy in 2016 in favor of a two-child policy and later introduced a three-child policy in May 2021. This context is important for understanding the family structures within which the preschoolers are being raised.

2.3 Measures

DeBaryshe and Binder (1994) first proposed the PRBI to assess parents' reading perception, attitude, value and belief, which is a 42-item instrument and is composed of 7 subscales.¹⁴ Examples of the PRBI item are shown below in Table 3:

Table 3. Examples of Parent Reading Belief Inventory Item

Scale	Examples of Item Content
Teaching efficacy	Children do better in school when their parents also teach them things at home.
Positive Affect	When we read, I try to sound excited, so my child stays interested.
Verbal Participation	When we read, we talk about the pictures as much as we read the story.
Reading Instruction	When we read, I have my child point out different letters or numbers that are printed in the book.
Knowledge Base	Reading helps children learn about things they never see in real life, like Eskimos and polar bears.
Resources	I don't read to my child because there is no room and no quiet place in the place.
Environmental Input	Children inherit their language ability from their parents, it is in their genes.

¹⁴ DeBaryshe, B. D., & Binder, J. C., "Development of an Instrument for Measuring Parental Beliefs About Reading Aloud to Young Children," *Perceptual and Motor Skills* 78 (1994): 1303-1311.

The entire PRBI is based on a 5-point scale in Likert format (1=strongly disagree, 2=disagree, 3=not certain, 4=agree, 5=strongly agree). This research did not adopt the Taiwanese Mandarin Chinese version directly as there are linguistic differences between the Taiwan region and the Chinese mainland. To facilitate participants' comprehension of all the items in the PRBI inventory, it is translated from English to Chinese and then back to English by two PhD candidates who majored in Conference Interpreting Chinese and English Bi-direction. This is to guarantee the accurate translation and ensure the appropriate language usage of Chinese mainland cultural contexts. Also, a pilot study was carried out to examine whether the translated version of the questionnaire is also culturally appropriate for parents in the Chinese mainland and to guarantee that they can also understand the items.

2.4 Data Analysis

All models of confirmatory factor analysis were estimated using Mplus 8.3. SPSS 23.0 was used to calculate Cronbach's alpha coefficients.

Model Specification. As Figure 1 showcased, to begin with, 42 items were considered as a single factor to examine the factor structure of the entire PRBI to validate the reading inventory. Secondly, in order to investigate the correlation factors among them, the seven subscales were individually treated as separate factors. Thirdly, a second-order factor was loaded as a single general factor with the seven subscales being treated as the first-order factor as an indicator. A series of model fit information was used to assess the fit of the confirmatory factors model, namely, chi-square likelihood ratio test, chi-square test of model fit and the degrees of freedom ratio (CMIN/df) proposed by Kline,¹⁵ Bentler's Comparative Fit Index (CFI) as suggested by Miles and Shevlin, and Root Mean Square

¹⁵ Barrett, P., "Structural Equation Modeling: Adjudging Model Fit," *Personality and Individual differences* 42(2007): 815-824; Kline, R. B., *Principles and Practice of Structural Equation Modeling*, (New York: The Guilford Press, 2005).

Error of Approximation (RMSEA) as recommended by Barrett.¹⁶ The cut-off values for the fit indices show that a CFI value above 0.90 is considered to demonstrate acceptable fit parameters and RMSEA below 0.08, P-value below 0.05.¹⁷

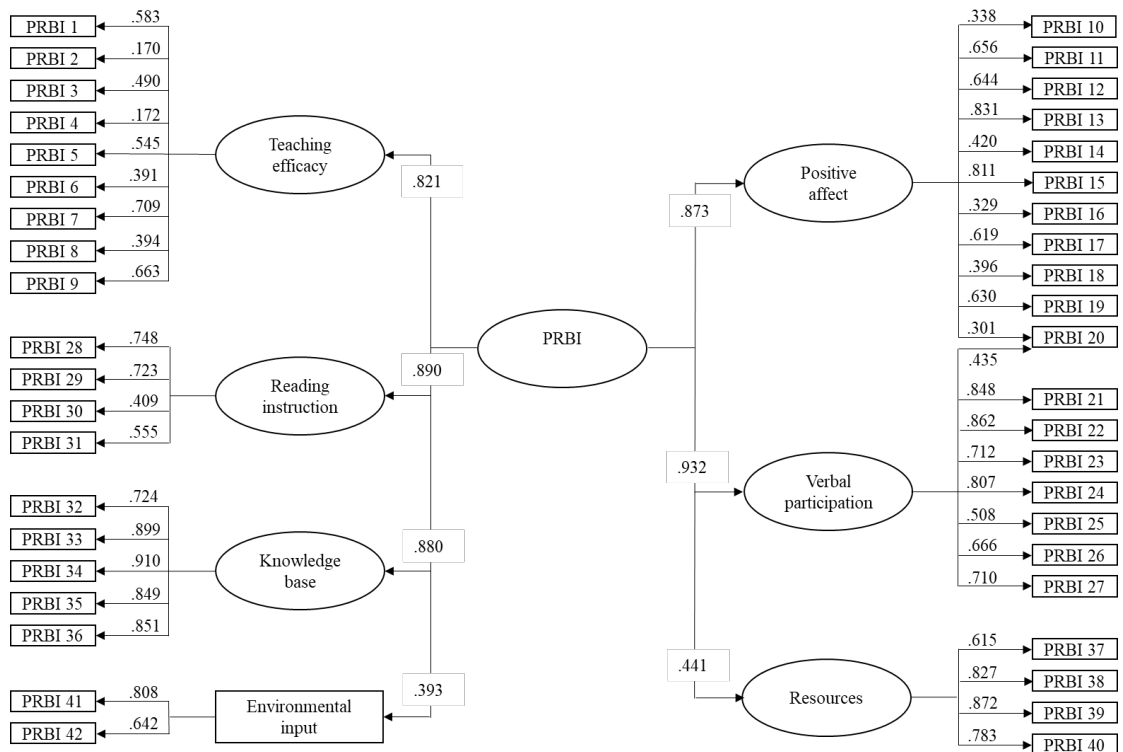


Figure1. Confirmatory Factor Analysis Model with Standardized Factor Loadings with Each Loading is significant at $p < 0.001$

2.5 Results

The PRBI subscales' original alpha reliability coefficients of the developers and the internal consistency estimation of the PRBI of other researchers are all given in Table 4,

¹⁶ Miles, J., & Shevlin, M., "A Time and Place for Incremental Fit Indices," *Personality and Individual Difference* 42(2007): 869-874. Barrett, P., "Structural Equation Modeling: Adjudging Model Fit," *Personality and Individual differences* 42(2007): 815-824.

¹⁷ Hu, L., & Bentler, P. M., "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives," *Structural Equation Modeling* 6(1999): 1-55.

among which alpha coefficients were also calculated for each of the subscales. As shown in the Table, the internal consistency estimates in the prior studies were not in line with each other and demonstrated substantial variance in different cultural contexts.

Table 4. Comparison of Internal Consistency Estimates For Each Subscale of the PRBI in Different Studies

Subscales	Number of Items	DeBaryshe & Binder (1994)	Rodriguez et al. (2009)	Radišić & Ševa (2013)	Martelo (2013)	Gonzales et al. (2013)	Dhimas (2015)	Present Study (2021)
Teaching Efficacy	9	0.73	0.79	0.58	0.69	0.68	0.62	0.71
Positive Affect	11	0.85	0.79	0.77	0.75	0.77	0.80	0.74
Verbal Participation	8	0.83	0.88	0.76	0.88	0.83	0.76	0.90
Reading Instruction	4	0.63	0.65	0.65	-0.97	0.73	-0.16	0.87
Knowledge Base	5	0.82	0.77	0.65	0.79	0.80	0.62	0.93
Resources	4	0.79	0.86	0.59	0.86	0.80	0.73	0.85
Environmental Input	2	0.50	0.39	0.50	0.01	0.72	0.43	0.68

Table 5. Basic Information of PRBI Participants in Various Studies

Participants	DeBaryshe & Binder (1994)	Curento n, & Justice (2008)	Rodriguez et al. (2009)	Wu & Honig (2010)	Radišić & Ševa (2013)	Martelo (2013)	Gonzales et al. (2013)	Dhimas (2015)	Present Study (2021)
Numbers	155	45	274	888	227	150	136	265	1656
Background	Mexican American Mothers	European Americans in Appalachian Mountains	Mexican American Mothers	Taiwanese mothers	Serbian Parents	Hispanic Parents in Florida	Diverse Ethnicity Parents in Texas, USA	Albania Parents in Albania	Chinese Parents in Southern China

SES	Low	Low	Low	Middle	Not Stated	Not Stated	Low	Not Stated	Low Middle High
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As Table 5 shows, prior studies are either predominantly Caucasian or of low SES samples from the Western hemisphere, which raises concerns about the generalizability of the PRBI across different cultural contexts. Also, most studies are of a small sample size, apart from Wu & Honig,¹⁸ which recruited 888 participants, and remained a relatively larger sample. It is noted that the validity of the PRBI warrants careful reconsideration as the overall representation remains limited. Therefore, it is crucial to acknowledge that the applicability of the PRBI to the demographic has not yet been established because of the small sample size of the previous studies. The Western-focused PRBI may not be suitable for the Chinese context without modification due to cultural differences in parenting beliefs, language nuances, and item relevance. It is far from enough to draw definitive conclusions and claim that PRBI serves as a trustworthy instrument to measure Chinese parent's reading perceptions and attitudes since the previous research did not validate the suggested core factor structure of the PRBI, leaving the study remains unknown whether the PRBI could well match the Chinese parents' reading belief.

The lack of validation for the core factor structure of the PRBI in the context of Western countries and Taiwan suggests that the instrument may not effectively capture the unique beliefs and attitudes held by these populations. Consequently, while these researches may offer valuable insights into reading perceptions among parents of diverse cultural backgrounds, they should be interpreted with caution, as authors in these studies failed to affirm the PRBI's reliability or validity for their specific cultural group. Therefore, it underscores the necessity for ongoing research, which includes 1,656 participants, it not only expands the sample size and diverse SES sample but also rigorously tests the PRBI's applicability in varied sociocultural contexts.

Figure 1 presents the standardized factor loadings for the original PRBI inventory's

¹⁸ Wu, C. C., & Honig, A. S., "Taiwanese Mothers' Beliefs about Reading Aloud with Preschoolers: Findings from the Parent Reading Belief Inventory," *Early Child Development and Care* 180(2010): 647-669.

overall second-factor model, which comprises seven subscales as first-order factors. As detailed in Table 6, this model has the poorest fit among the various models considered. The analytical results are as follows: $\chi^2(819) = 15822.185$, $p < 0.001$, CFI = 0.621, RMSEA = 0.105. These data indicate that both the CFI and RMSEA values suggest a very poor fit. Table 6 provides the fit statistics for the confirmatory factor analysis models for each subscale, as well as for the three overarching models: single factor, correlated factor, and second-order factor models. As can be seen in Table 6, there is substantial variation in the degree of poor fit among the models. The subscales of Reading Instruction, Knowledge Base, and Resources show favorable CFI values. However, the RMSEA values indicate a poorer fit for all three subscales. The Verbal Participation subscale is close to having adequate fit parameters, yet the RMSEA still indicates a worse fit.

Table 6. Confirmatory Factor Analysis Models' Fit Statistics of the PRBI with 42 Items

Model	$\chi^2(df)$	p	CMIN/df	CFI	RMSEA
	Individual	Subscale	Models		
Teaching Efficacy	1536.770 (27)	<0.001	56.91	0.572	0.184
Positive Affect	1676.675 (44)	<0.001	38.10	0.768	0.150
Verbal Participation	847.127 (20)	<0.001	42.35	0.891	0.158
Reading Instruction	53.442 (2)	<0.001	26.72	0.960	0.125
Knowledge Base	88.756 (5)	<0.001	17.75	0.987	0.101
Resources	100.247 (2)	<0.001	50.12	0.969	0.172
	Overall models				
Single Factor	15822.185 (819)	<0.001	19.31	0.621	0.105
Correlated Factors	9157.958 (797)	<0.001	11.49	0.792	0.079
Second-order Factor	9928.379 (811)	<0.001	12.24	0.769	0.082

Table 7 Model Estimates for the Correlated Model of The Original Inventory

Teaching Efficacy	Positive Affect	Verbal Participation	Reading Instruction	Knowledge Base	Resources	Environmental Input
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Ite m	SR W	Ite m	SR W	Item	SRW	Ite m	SR W	Ite m	SR W	Ite m	SR W	Item	SRW
1	.566	10	.364	20	.751	28	.759	32	.725	37	.625	41	.729
2	.201	11	.653	21	.843	29	.716	33	.898	38	.820	42	.721
3	.778	12	.633	22	.857	30	-.388	34	.909	39	.864		
4	.206	13	.821	23	.712	31	-.568	35	.850	40	.795		
5	.527	14	.451	24	.807			36	.852				
6	.433	15	.801	25	.516								
7	.702	16	.355	26	.672								
8	.432	17	.621	27	.716								
9	.654	18	.424										
		19	.626										
		20	.584										

*SRW stands for Standard Regression Weights

In Table 7, the standardized factor loadings for the comprehensive correlated factor model of the PRBI are displayed, indicating the loadings for each individual subscale. It is noted that the Standard Regression Weights (SRW) of 9 subscales are below 0.500, namely, items 2, 4, 6, 8 in Subscale Teaching Efficacy, items 10, 14, 16, 18 in Subscale Positive Affect, item 30 in Subscale Reading Instruction. As shown in Table 7, this correlated model has a poor fit within the data, $\chi^2(797) = 9157.958$, $p < 0.001$, CFI=0.792, RMSEA=0.079.

As can be seen in Table 6, the PRBI's second-order factor model, among which each subscale is loaded as first-order factors, the statistics indicate a slightly better fit when compared with the correlated model fit statistics, yet unsatisfactory parameters. Specifically, the reading belief of parents is regarded as a single general factor while 7 subscales are measured separately. The fit statistics of a second-order model are as follows: $\chi^2(811) = 9928.379$, $p < 0.001$, CFI=0.769, RMSEA=0.082. Both the correlated factors model and the second-order factor model exhibit comparable fit parameters, which are not yet close to a good fit model. Furthermore, the overall model has the poorest fit in the single factor model while all 42 items are loaded as a single general factor. the single-factor model, where 42 items are treated as a single general factor, demonstrates the lowest level of fit in

the overall model.

Therefore, due to the unsatisfactory fit statistics observed in the confirmatory factor analysis models of the original PRBI containing 42 items, there is a need to make improvements to incorporate the PRBI into the Chinese cross-cultural context. Items 2, 4, 6, and 8 in Subscale Teaching Efficacy, items 10, 14, 16, 18 in Subscale Positive Affect, and item 30 in Subscale Reading Instruction are all deleted because these items' Standard Regression Weights (SRW) are below 0.500. Also, it is worth noting that Cronbach's alpha coefficient of the revised PRBI is 0.92, which is much better than the original inventory of 42 items, which is 0.85. Furthermore, the internal consistency of each subscale in the revised PRBI with 33 items also exhibits a better alpha coefficient than the original inventory with 44 items as shown in Table 8.

Table 8. Reliability Statistics

Number of Items	Cronbach's Alpha Coefficients
42	0.85
33	0.92

Table 9. Cronbach's Alpha of the Two Inventory

Subscales	42 items		33 items	
	N of Items	Cronbach's Alpha	N of Items	Cronbach's Alpha
Teaching efficacy	9	0.71	5	0.75
Positive Affect	11	0.74	7	0.87
Verbal Participation	8	0.90	7	0.92
Reading Instruction	4	0.87	3	0.61
Knowledge Base	5	0.93	5	0.95
Resources	4	0.85	4	0.86
Environmental Input	2	0.68	2	0.69

The comparison of Cronbach's Alpha values between the two inventories in Table 9, consisting of 42 items and 33 items, demonstrates a significant enhancement in the

reliability of the revised 33-item inventory. Several subscales exhibit improved or comparable alpha coefficients, indicating greater internal consistency. For instance, the Teaching Efficacy subscale increases from 0.71 to 0.75, while the Positive Affect subscale rises from 0.74 to 0.87, suggesting that the revisions have effectively strengthened these constructs. Additionally, the Verbal Participation subscale maintains high reliability with an alpha of 0.92 in the shortened inventory, consistent with its previous value of 0.90. The Knowledge Base subscale achieves an impressive alpha of 0.95, improving from 0.93. Although the Reading Instruction subscale shows a slight decrease from 0.87 to 0.61, it is important to consider the overall improvements in other areas, which contribute to a more streamlined and effective assessment tool. The enhancements in the Positive Affect and Knowledge Base subscales, in particular, underscore the revised inventory's capacity to facilitate more accurate evaluations of educational constructs, thereby affirming its superiority over the original 42-item version.

As shown in Table 10, the correlated factors model of the revised PRBI with 33 items model has a very good fit within the data, $\chi^2(471) = 2772.089$, $p < 0.001$, CFI=0.930, RMSEA=0.054. In particular, in the revised PRBI's second-order factor model, among which each subscale is loaded as first-order factors, the statistics also indicate a very good fit, namely, $\chi^2(485) = 3573.962$, $p < 0.001$, CFI=0.906, RMSEA=0.062. Both correlated models and second-order model most fit the theoretical framework of the entire PRBI. When the overall parental reading belief is considered as a singular factor, specific beliefs are assessed using individual subscales, CFI has good fit parameters while RMSEA also has a close fit. The fit statistics are: $\chi^2(492) = 8750.072$, $p < 0.001$, CFI=0.748, RMSEA=0.101. As is shown, correlated factors model showcase the best fit parameters while second-order factor also show good fit indices.

Table 10. Fit Statistics for Confirmatory Factor Analysis Models of the PRBI with 33 Items

Model	$\chi^2(df)$	p	CMIN/df	CFI	RMSEA
	Individual	Subscale	Models		

Teaching Efficacy	122.413 (5)	<0.001	24.48	0.933	0.119
Positive Affect	250.412 (13)	<0.001	19.26	0.952	0.105
Verbal Participation	257.203 (12)	<0.001	21.43	0.963	0.111
Reading Instruction	-	-		-	-
Knowledge Base	88.756 (5)	<0.001	17.75	0.987	0.101
Resources	100.247 (2)	<0.001	50.12	0.969	0.172
	Overall models				
Single factor	8750.072 (492)	<0.001	17.78	0.748	0.101
Correlated factors	2772.089 (471)	<0.001	5.88	0.930	0.054
Second-order factor	3573.962 (485)	<0.001	7.36	0.906	0.062

*After removing question 1, only three questions remain, resulting in model saturation; therefore, there are no fit indices available.

Table 11. Correlated Model's Model Estimates

Teaching Efficacy		Positive Affect		Verbal Participation		Reading Instruction		Knowledge Base		Resources		Environmental Input	
Item	SRW	Item	SRW	Item	SRW	Item	SRW	Item	SRW	Item	SRW	Item	SRW
1	.595	11	.630	21	.798	28	.786	32	.726	37	.618	41	.726
3	.527	12	.630	22	.813	29	.703	33	.897	38	.823	42	.715
5	.571	13	.782	23	.710	31	-.588	34	.909	39	.867		
7	.690	15	.760	24	.803			35	.850	40	.793		
9	.670	17	.655	25	.528			36	.852				
		19	.669	26	.688								
		20	.715	27	.740								
				20	.780								

3. Discussion

This present study explores the factor structure and examines the reliability and validity of the original PRBI on a large sample of Chinese parents in southern China. It is noted that internal consistency for all seven subscales was established (as shown in Table

4), however, when using confirmatory factor analysis, this study found overall models fit poorly for the PRBI in terms of single factor model, correlated and second-order factor models. In particular, standardized factor loadings of the model of confirmatory factor analysis for the original PRBI inventory with 42 items in this present study echoes the result of Gonzales et al. and Radišić & Ševa,¹⁹ which also reported a poor fit of the model, namely, $\chi^2(812) = 1,480$, $p < 0.001$, CFI=0.638, SRMR=0.100 and $\chi^2(819) = 2088.506$, $p < 0.000$, CFI=0.467, RMSEA=0.083, respectively. Though this study found poor fit parameters of the original PRBI inventory, due to the comparatively larger sample of participants (N=1656), the single factor, correlated factors and second-factor models all yield much better fit indices when compared with the results of Gonzales et al. (N=136) and Radišić & Ševa (N=227). Furthermore, the SRW of each item yielded much better results in this study when compared with the research of Radišić & Ševa .

Moreover, this current study also found Cronbach's alpha coefficients of certain subscales are not in line with those of prior research. Subscale Reading Instruction, Knowledge Base and Resources of this study fulfill good fit indices while in the research of Rodriguez et al. (2009) Verbal Participation and Resources showcase good coefficient alphas and component loadings, and in the study of Gonzales et al. Subscales both the Reading Instruction and Resources reached good internal consistency estimates, whereas in Radišić & Ševa's research Subscales' Positive Affect and Knowledge Base were only close to adequate fit parameters.

Based on the unsatisfying CFA analysis of the original PRBI inventory with 42 items, this study further revised the inventory by deleting 9 items whose Standard Regression Weights (SRW) are below 0.500. The revised PRBI with 33 items reached satisfactory model estimates in either the correlated factors model or second-order factor model. Moreover, all seven subscales of this inventory showcase good CFI within the fit indices,

¹⁹ Gonzalez, J. E., Taylor, A. B., Davis, M. J., & Kim, M., "Exploring the Underlying Factor Structure of the Parent Reading Belief Inventory (PRBI): Some Caveats," *Early Education and Development*, 24(2013): 123-137; Radišić, J., & Ševa, N., "Exploring the Factor Structure of the Parent Reading Belief Inventory (PRBI): Example of Serbia," *PSIHOLOGIJA* 46(2013): 315-330.

which all arrive at above 0.900. In particular, the SRW of the 33 items are all above 0.500, which indicates a much better inventory for assessing parental reading belief when compared with both the original fit statistics for CFA analysis models and model estimates for the correlated model for the original PRBI inventory with 42 items. It is noted that in the Subscale Reading Instruction, the model is saturated, which includes 3 items in the revised inventory, thus this subscale contains no goodness-of-fit index.

Since no validated instrument to measure Chinese parents' reading beliefs is currently available, this revised inventory with 33 items could serve as an instrumental measure to examine parental involvement, early literacy practices and perceptions of preschoolers' shared-book reading experience and early language development. It fills a needed gap to assess parents' reading beliefs in the Chinese context.

4. Limitation and Implication

As the data were primarily from parents' self-reported questionnaires, it did not depict a holistic multifaceted picture of the parental reading perception and capture the actual home literacy activities in children's language development in early years. It is unavoidable that social desirability bias might also lead to better parental reading values results. Future qualitative research is warranted to better examine both fathers' and mothers' comprehension and interpretations of these items. For example, home visits could be conducted to better observe parental literacy involvement and reading practices. Also, semi-structured interviews or focus groups with parents of diverse educational attainment and backgrounds could be adopted to better understand parents' reading values and modified parenting practices in children's early years. In particular, paternal questionnaire responses in the current study include 162 participants, which constitutes around 10% of the entire sample population, though this sample size of father participants outnumbers prior studies, it is still a relatively small percentage when compared with maternal responses. Thus, the result should not be generalized since there exists an imbalance of the parental gender. It is worth noting that parental reading belief could vary greatly among

different SES families and geographical regions. Therefore, continued replication of this finding with more diverse samples from various regional parts of China is needed to thoroughly investigate the accuracy and consistency of the revised PRBI and explore other possible modifications of this inventory.

Despite the limitations, this current study yields implications for future researchers and practitioners while at the same time filling an urgently needed gap by providing a much more appropriate instrument for parental reading belief which is better situated in the Chinese mainland context. Given the increasing numbers of research on family literacy environment and parental involvement in children's early language development in China, we call for more valid and reliable instruments to measure parental reading perceptions and attitudes as well as parental literacy practices and parental involvement to depict a more comprehensive picture of the journey of preschoolers' language acquisition.

Future studies could adopt a more comprehensive approach, namely, home visits and focus groups to gain a better understanding of how parents' reading practices and involvement in literacy activities shape children's language development. Also, the role of other family members such as grandparents and other caregivers in shaping the home literacy environment should be taken into consideration, which could depict a more comprehensive picture of children's literacy trajectory. The need for qualitative insight and adaptation of instruments calls for more replication studies with diverse SES samples. To enhance the reliability of the PRBI and its relevance across different populations, researchers should adapt the inventory to reflect the linguistic and cultural contexts of various communities. This variation can profoundly impact children's language acquisition. Future studies should explore these disparities to understand how different contexts influence literacy development, potentially leading to more tailored interventions that support families in diverse settings. In this way, assessments of parental beliefs and practices are valid and applicable to a broader range of families.

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