Scientific
Research
Publishing

The Use of Interaction Strategies in Mother-Child Joint Book Reading for Ages 3 to 6 in China

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Abstract

The purpose of this study was to investigate the use of interaction strategies used by Chinese mothers and children in the process of joint book reading and the effect of the use of interaction strategies on children's language. Participants were drawn from 74 mother-child dyads in mainland China, and the mean ages of the children were 36, 48, 60, and 72 months. The results showed that 1) among Chinese mothers and children aged 3 to 6 years, only mothers' MLU differed significantly among the four age groups and was highest when the children were 3 years old, significantly higher than other age groups. 2) mothers' attract attention strategies, feedback strategies, provide information strategies, and repeat or clarify strategies differed significantly across age groups, while none of the other interaction strategy types differed significantly; There were no significant differences in children's all interaction strategies across age groups. 3) Except for no response, all interaction strategies used by mothers were significantly and positively related to some of the children's interaction strategies. 4) Many of the mother's interaction strategies positively predicted the child's corresponding interaction strategies, with mother's feedback and propose evaluation strategies being the strongest positive predictors of the children's provided information strategies use. The educational implications and suggestions for further research were discussed.

Keywords

Mother-Child, Joint Book Reading, Interaction Strategies, Chinese

1. Introduction

Mother-child joint book reading is the process of a mother and child reading a book together. Many studies have shown that parent-child joint book reading is

a very important parent-child interaction activity that not only promotes the reading development of preschool children as well as influences future academic achievement, but also promotes the development of the child's future personality qualities (Bus et al., 1995; Grimminger & Rohlfing, 2019; Lucca et al., 2019; Raikes et al., 2006). Bus et al. (1995) Studies have shown that joint book reading is associated with children's language skills, new literacy rates, and reading achievement, and further research has shown that mother-child reading significantly predicts children's later language and cognitive abilities (Raikes et al., 2006).

Multimodal communication between mother and child in a joint book reading situation explains 55% of the variation in the children's later vocabulary (Grimminger & Rohlfing, 2019). In a persistence study of 29 18-month-old infants, Lucca et al. (2019) found that parental persistent verbal encouragement during joint book reading also significantly predicted the child's future persistence qualities. It is clear that parent-child reading plays a critical role in all aspects of children's development.

In parent-child joint book reading, an interactive model is often used in mother-child communication. And early mother-child interactions predict the children's future academic achievement in advance (Gregory & Rimm-Kaufman, 2008). Early studies observed that mothers used an interactive mode of conversation in joint book reading, including getting attention, obtaining information, providing labels, and providing feedback (Ninio & Bruner, 1978). The discovery of these interaction strategies laid the foundation for later research on parent-child interactions in joint book reading. Later studies found that mothers' interaction strategies changed as their children changed with age. For infants aged 44 - 63 weeks, who are not yet able to speak, the mother will not ask their children for feedback during the interactions (Bus & van Ijzendoorn, 1997). When the child begins to speak, the mother asks the child to provide information in the interaction (Ninio, 1980, 1983). In a vocabulary study of storybook reading with 4-year-olds, Sénéchal et al. (1995) found that when parents and children read storybooks, parents made interaction strategies that were age-specific, with older children providing more feedback and younger ones providing more elaboration and using attention-getting (Sénéchal et al., 1995). Chang and Ya-Hui (2020) also noted that Taiwanese mothers adjust the use of interaction strategies as their children grow.

A number of studies have demonstrated that the use of interaction strategies in joint book reading promotes young children's language and literacy development. For example, in a longitudinal study of interaction strategies with Taiwanese children, scholars examined the relationship between mothers' interaction strategies and children's language and early literacy skills and showed that mothers' use of strategies of description, performance, predictive reasoning, and print-related talk were positively related to children's language and literacy skills (Chang & Ya-Hui, 2020). Finnish mothers use interaction strategies of complex

expansion and questioning to promote children's language skills (Silvén et al., 2003). The study found that mothers used more narrative and explanatory strategies during joint book reading to promote children's language achievement (Rowe, 2013). These studies suggest that the interaction strategies used by mothers during joint book reading can have a significant impact on children's future language development.

However, there are relatively few studies on interaction strategies in mother-child joint book reading in China, and most of them focus on ages before 3 years old. A recent 3-year longitudinal study on the interaction strategies of mothers and children joint book reading in Taiwan showed that the focus of the interaction strategies used by mothers changed when children were 14, 26, and 36 months old. As children age, mothers increased their use of text-reading strategies and print-related talking strategies, but significantly decreased their use of task-behavioral conditioning strategies (Chang & Ya-Hui, 2020). A study of parent-child joint book reading under a group of two social backgrounds with mean ages of 41 and 42 months showed that mothers' talk strategies differed across social classes, with the most common strategies being: requesting information, providing information, requesting attention, providing attention (Chang & Huang, 2016), with mothers from low-income families having significantly more attention requesting strategies and significantly less attention providing strategies than mothers from high-income families. A subsequent study of print concepts in parent-child joint book reading with children aged 1 to 3 years also found a significant positive correlation between mothers' use of print-referenced interaction strategies and children's use of print-referenced strategies (Chang et al., 2016). These studies suggest that research on mother-child joint book reading interaction strategies in Chinese contexts is incomplete, and there is a particular lack of relevant research on the 3 - 6-year-old age group. 3 - 6 years old is a critical period in the development of young children's language skills, and it is a crucial period for developing children's reading skills. Exploring research on interaction strategies in mother-child joint book reading for children aged 3 to 6 years is not only important for cultivating children's early reading skills and promoting their language development, but also for improving the shortcomings of research on this age group under the same theme, enriching Chinese The study of children's speech in the context plays an important role.

Therefore, we pose the following four research questions in this study.

1) What are the characteristics of the basic language of Chinese mothers and children during the 3 to 6 years of age stage?

2) What are the differences in the interaction strategies used by mothers and children at different ages from 3 to 6 years old?

3) What is the relationship between the interaction strategies used by mothers and those used by children during the 3 to 6 years of age period?

4) Can the interaction strategies used by mothers significantly predict children's interaction strategy use during the 3 to 6 years of age period?

2. Method

2.1. Subjects

The participants in this study were 74 mother-child dyads (38 boys and 36 girls) who lived in China for a long time and used Mandarin as their daily language of communication. Children were from four age groups: three years old (35 - 37 m), four years old (48 - 49 m), five years old (59 - 61 m), and six years old (71 - 73 m). There were 11 boys and 6 girls in the three-year-old group; 8 boys and 11 girls in the four-year old group; 9 boys and 10 girls in the five-year old group; and 10 boys and 9 girls in the six-year old group. The mothers of the children were 28 - 35 years old, and all mothers had an educational background of college or higher, and were generally similar in socioeconomic status as well as occupational status. All children were recruited from three kindergartens in Nanjing, China. Mothers and lead teachers reported no evidence of any hearing or developmental delays in these children. All mothers were reading with their children at the time of participation in this study.

2.2. Procedures

A video recording method was used to collect the language samples for this study. The mother-child interaction took place in the classroom of the children's kindergarten, which made it easier for the mother and child to come and go, and for the child to enter the situation. With the consent of the parents and teachers, the researchers collected the language samples of mother-child interactions by video recording for data collection. Data were collected in two phases.

1) Collection

The procedure of taking the language samples was based on the Harvard University project (Snow et al., 1996) and incorporated the actual mother-child interaction in China. We asked all mothers and children to read the same book together: "Peepers Eat Jumpers". Each language sample was filmed for a total of 20 minutes, with an initial 2-minute warm-up period designed to help the children adjust to the environment and become familiar with the general content of the picture book. The verbal communication between mother and child during this time does not enter into the final data computation.

The entire process is videotaped and is recorded with a tape recorder, supplemented by notebook shorthand. At the end, the researcher will communicate with the parents about the parts of the interaction that were unclear to avoid misunderstandings in the subsequent language samples processing. Valid speech acts collected during the process will be coded as needed in the subsequent processing.

2) Transcription

The completed videos were processed in the Child Language Date

Exchange System (CHILDES) format of Codes for the Human Analysis of Transcripts (CHAT) (MacWhinney, 2000). The language of each mother and child in the video was recorded in textual form, and the speech was segmented according to intonation (such as questions or exclamations), turn of phrase, and

natural pauses (Leadholm & Miller, 1994). Then, each utterance was coded separately and further segmented in terms of lexical elements as units of discourse length (Cheung, 1998). All symbols, except Chinese characters, are displayed in the English state. Finally, they are transcribed into text files that can be run in Computerized Language Analysis (CLAN).

2.3. Coding Scheme

The interaction coding scheme adapted from Detemple (1994), Chang (2000) and Luo et al. (2012). We made appropriate modifications to the coding scheme based on the collected data. The coding unit used in this study is discourse. The specific coding definitions and examples are as follows.

Type	Definition	Example
AQ (ask a question)	Refers to asking questions to start a certain topic. Question types are divided into two categories based on the questioning. A. OPEN (open-ended question) B. Y/N (yes/no question)	A: Mother: "What is this?" B: Mother: "Is this it?"
FB (feedback)	A response to a discourse or a question.	Mother: "Look here." Child: "Hmm."
PI (provide information)	Provide information content.	Mother: "They're brushing their teeth."
PE (propose evaluation)	Expresses opinions about the characters or events in the story.	Mother: "It's not right for him to do that."
AA (attract attention)	Refers to words used to attract the other person's attention.	Mother: "Look here."
RC (repeat or clarify)	Repeating the former words and content, or correcting or clarifying the former words.	Mother: "What is this?" Child: "Book" Mother: "Oh, the book."
TI (task instruction)	On assigning tasks and demanding words of command.	Mother: "You read it."
NR (no response)	Indicates that the speaker is silent or refuses to answer the question.	Mother: "What is he doing?" Child: "I don't know."

2.4. Coding Reliability

All language samples were coded by a researcher specializing in child language development, and 20% of the language samples were randomly selected and independently coded by another researcher. After coding, we used Cohen's Kappa statistic to assess the inter-rater reliability of the interaction coding, and Cohen's Kappa = 0.94, with high inter-coder agreement.

2.5. Data Analysis

The focus of this study was on the interaction strategies used in mother-child

joint book reading. Therefore, overall indicators of the percentage of each interaction strategy used by each mother-child dyads during joint book reading were explored. Moreover, the study analyzed the language performance of Chinese children and mothers during joint book reading using the CLAN procedure, including basic language measures such as total number of words, mean length of utterances, total number of different words, and total number of word types. Statistical analyses such as ANOVA, Pearson correlation analysis, and multiple regression analysis were conducted using SPSS 26.0 to answer the questions of this study.

3. Results

3.1. Basic Language Measures

The first goal of this study was to explore the basic linguistic characteristics of Chinese mothers and children. For this, a one-way analysis of variance (ANOVA) was used to calculate the mean and standard deviation of the total number of words, total number of different words, mean length of utterances (MLU) and mean length of turns (MLT) between the groups. The results of the descriptive statistics for these basic language measures are presented in Table 1.

Table 1. Means and standard deviations of total number of different words, total number of words, MLU, and MLT across groups.

variable	Age groups	Mother			Child		
		M	SD	$F_{(3,70)}$	M	SD	$F_{(3,70)}$
type	3	73.06	47.60	0.999	26.29	21.44	1.854
	4	109.58	81.15		26.68	27.02	
	5	101.11	68.09		34.95	29.01	
	6	103.16	68.16		46.05	37.04	
token	3	168.29	126.90	1.182	49.35	56.17	1.448
	4	283.21	269.43		40.32	46.89	
	5	195.42	168.98		57.21	59.88	
	6	229.21	179.46		82.16	88.23	
MLU	3	4.13	0.81	4.819** (Age 3 > Age 4* Age 3 > Age 5* Age 3 > Age 6*)	2.44	0.67	2.449
	4	3.33	0.68		2.03	0.89	
	5	3.33	0.93		2.47	0.75	
	6	3.20	0.79		2.69	0.72	
MLT	3	14.54	12.05	1.185	2.77	0.91	0.888
	4	19.00	23.71		2.89	3.76	
	5	15.18	12.65		3.88	2.67	
	6	9.86	5.07		3.71	1.91	

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

As shown in Table 1, there was and is only a significant difference in mothers' MLU between the four age groups, $F_{(3,70)} = 4.819$, $p < 0.01$. Post hoc analysis (LSD) showed that mothers' MLU was significantly higher at age 3 than at age 4, 5, and 6. This suggests that mothers' MLU was highest only at age 3 and significantly higher than at other ages, where the mother's utterances was the longest. In addition, mothers' MLT, total number of words, and total number of different words were not significantly different on the four age groups. There were also no statistically significant differences in the children's four language proficiency indicators of MLU, MLT, total number of words, and total number of different words across the four age groups.

3.2. The Use of Interaction Strategies in Mother-Child Joint Book Reading

The second objective of this study was to reveal differences in the interaction strategies used by mothers across age groups and differences in the interaction strategies used by children. We first conducted an ANOVA on the differences in the percentage of interaction strategies used by mothers during joint book reading between the different age groups, and the results are presented in Table 2.

Table 2. Proportions of interaction strategies used by mothers across groups.

Interaction strategy	Age groups								$F_{(3,70)}$
	Age 3		Age 4		Age 5		Age 6		
	M	SD	M	SD	M	SD	M	SD	
Attract attention	0.043	0.031	0.035	0.051	0.009	0.012	0.014	0.026	4.464* (Age 3 > Age 5* Age 3 > Age 6*)
Ask a question	0.335	0.164	0.388	0.197	0.255	0.148	0.280	0.168	2.301
Open-ended	0.255	0.140	0.307	0.213	0.200	0.123	0.231	0.151	1.512
Yes/no	0.080	0.056	0.080	0.083	0.055	0.062	0.049	0.055	1.177
Feedback	0.135	0.121	0.078	0.072	0.119	0.088	0.244	0.170	6.780*** (Age 6 > Age 4* Age 6 > Age 5*)
No response	0.002	0.009	0.000	0.000	0.000	0.000	0.000	0.000	1.123
Propose evaluation	0.026	0.033	0.026	0.051	0.010	0.021	0.025	0.076	0.463
Provide information	0.241	0.160	0.310	0.183	0.445	0.231	0.308	0.185	3.621* (Age 5 > Age 3* Age 5 > Age 4* Age 5 > Age 6*)
Repeat or clarify	0.096	0.060	0.031	0.037	0.027	0.031	0.019	0.032	12.760*** (Age 3 > Age 4* Age 3 > Age 5* Age 3 > Age 6*)
Task instruction	0.122	0.130	0.133	0.124	0.135	0.146	0.109	0.141	0.142

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

As shown in Table 2, the percentages of all interaction strategies used by mothers during mother-child joint book reading showed an overall decreasing trend over the different age stages. We conducted a one-way ANOVA for each interaction strategy separately. There were significant differences in the use of mothers' Attract attention ($F_{(3,70)}$ = 4.464, $p < 0.05$), Feedback ($F_{(3,70)}$ = 6.780, $p < 0.001$), Provide information ($F_{(3,70)}$ = 3.621, $p < 0.05$), and Repeat or clarify ($F_{(3,70)}$ = 12.760, $p < 0.001$) strategies between the ages of 3 and 6 years. Post hoc analyses indicated that the use of the mother's Attract attention strategy was highest in the 3-year-old group and significantly higher than the use in the 5-year-old and 6-year-old groups. This suggests that when the children were younger at age 3, the mothers paid more attention to the children's attention during joint book reading and used Attract attention strategies to emphasize the children's concentration. In contrast, the percentage of mothers' use of Feedback strategies was highest in the 6-year-old group and significantly higher than in the 4-year-old and 5-year-old groups. This shows that the mothers of the older children were more inclined to use feedback with their children and would give more feedback on their children's problems when reading with them. Mothers' use of Provide information strategies was highest in the 5-year-old group and significantly higher than in the 3-year-old, 4-year-old, and 6-year-old groups. This suggests that mothers may focus more on the richness of information in their children's discourse at age 5 and tend to provide more information when reading together. For the Repeat or clarify strategy, on the other hand, mothers in the 3-year-old group had the highest usage rate and were significantly higher than the 4, 5, and 6-year-old groups. This reflects the fact that when the child is younger, mothers will correct their child's discourse more often and pay attention to the regularity of the utterance.

Then, we also conducted an ANOVA on the differences in the percentage of interaction strategies used by children during joint book reading between the different age groups, however, none of the results reached a statistically significant difference ($p > 0.05$). This indicates that between the ages of 3 and 6 years, the interaction strategies used by children during joint book reading with their mothers varied slightly less, were more stable, and generally converged, with no significant differences by age.

3.3. The Relationship between Mothers' Interaction Strategies and Children's Interaction Strategies

The third objective of this study was to explore the relationship between the interaction strategies used by mothers and those used by their children. To do so, Pearson correlation analysis was used to examine the relationship between the interaction strategies used by mothers across age groups and the interaction strategies used by children. The results of the correlation analysis are presented in Table 3.

As shown in Table 3, we found that, overall, there was a significant positive

Table 3. Correlation analysis between mothers' interaction strategies and children's interaction strategies use (r values).

	Mother's Attract attention	Mother's Ask a question	Mother's Open-ended	Mother's Yes/no	Mother's Feedback	Mother's No response	Mother's Propose evaluation	Mother's Provide information	Mother's Repeat or clarify	Mother's Task instruction	Mother's Total
Children's Attract attention	0.424**	−0.192	−0.158	−0.120	−0.092	−0.035	−0.071	−0.050	0.060	0.312**	
Children's Ask a question	0.263*	−0.340**	−0.362**	−0.006	0.139	0.061	−0.061	−0.013	0.106	0.238*	
Children's Open-ended	0.257*	−0.348**	−0.360**	−0.032	0.147	0.064	−0.062	−0.011	0.088	0.247*	
Children's Yes/no	0.057	0.053	−0.026	0.208	−0.061	−0.019	0.001	−0.013	0.154	−0.063	
Children's Feedback	0.000	0.535**	0.450**	0.310**	−0.185	0.024	−0.258*	−0.086	0.041	−0.308**	
Children's No response	0.160	0.023	0.020	0.013	−0.132	0.103	0.102	−0.077	0.107	0.093	
Children's Propose evaluation	−0.139	0.019	−0.001	0.054	0.043	−0.037	−0.091	−0.035	0.304**	−0.056	
Children's Provide information	−0.149	−0.167	−0.107	−0.179	0.433**	−0.003	0.476**	−0.086	−0.097	−0.181	
Children's Repeat or clarify	−0.066	−0.170	−0.188	0.012	−0.061	−0.057	0.050	0.239*	−0.106	−0.039	
Children's Task instruction	−0.227	−0.310**	−0.207	−0.313**	−0.012	−0.059	0.066	0.115	−0.108	0.321**	
Children's Total											0.758**

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

correlation between the interaction strategies used by the mother and the interaction strategies used by the child (r = 0.758, $p < 0.01$). Further analysis of each interaction strategy used by the mother and child showed that 1) the mother's Attract attention strategy was significantly and positively correlated with the child's Attract attention strategy (r = 0.424, $p < 0.01$), Ask a question strategy (r = 0.263, $p < 0.05$), and Open-ended strategy (r = 0.257, $p < 0.05$). 2) There was a significant positive correlation between mother's Ask a question strategy and child's Feedback strategy (r = 0.535, $p < 0.01$) and a significant positive correlation with child's Ask a question strategy (r = −0.340, $p < 0.01$), Open-ended strategy (r = −0.348, $p < 0.01$) and Task instruction strategy (r = −0.310, $p < 0.01$). The subcategories of Ask a question strategies were further explored and a significant positive correlation was found between both Open-ended (r = 0.450, $p < 0.01$) and Yes/no (r = 0.310, $p < 0.01$) used in the mother's Ask a question strategy and the child's Feedback strategy, while a significant negative correlation was found between the child's Ask a question strategy (r = −0.362, $p < 0.01$) and the Open-ended strategy (r = −0.360, $p < 0.01$) was only mother's Open-ended (r = −0.360, $p < 0.01$), and there was only a significant negative correlation between child's Task instruction strategy and Yes/no by the mother (r = −0.313, $p < 0.01$). 3) There was a significant positive correlation between mother's Feedback strategy only and child's strategy of providing information (r = 0.433, $p < 0.01$). 4) Similarly, there was a significant positive correlation between mothers' Repeat or clarify strategy and child's Propose evaluation strategy (r = 0.304, $p < 0.01$) only. 5) There was a significant positive correlation between

mother's Propose evaluation strategy and child's Provide information strategy (r = 0.476, $p < 0.01$), a significant negative correlation with child's Feedback strategy ($r = -0.258$, $p < 0.05$). 6) There was a significant positive correlation between the mother's strategy of providing information and the child's strategy of repeating or clarify ($r = 0.239$, $p < 0.05$) 7) There was a significant positive correlation between the mother's strategy of Task instruction and the child's strategy of attracting attention ($r = 0.312$, $p < 0.01$), Ask a question ($r = 0.238$, $p < 0.05$), open-ended ($r = 0.247$, $p < 0.05$), and task instruction strategy ($r = 0.321$, $p < 0.01$), but a significant negative correlation with the child's feedback strategy ($r = -0.308$, $p < 0.05$). These indicate that the interaction strategies used by the mother and used by the child are basically closely related to each other. All the various interaction strategies used by the mother, except for no response, are significantly correlated with some of the child's interaction strategies.

3.4. The Predictive Effect of Mothers' Interaction Strategies Used in Joint Book Reading on Children's Interaction Strategy Use

To explore the last objective, the predictive effect of each interaction strategy used by the mother on the use of each interaction strategy by the child, this study used multiple regression analysis for interpretation (see Table 4 for details). We set the percentage of each interaction strategy used by the mother as the independent variable and the percentage of each interaction strategy used by the child as the dependent variable, and introduced separate regression equations for multiple regression analysis.

As shown in Table 4, we can see that the child's Attract attention strategy (C1), Ask a question strategy (C2), Open-ended strategy (C3), Feedback strategy (C5), Propose evaluation strategy (C7), Provide information strategy (C8), and Repeat or clarify strategy (C9) were significantly influenced by the interaction strategies used by the mother and were able to have a significant predictive effect on their use.

Specifically, there were eight models as follows: first, the Attract attention strategy and Task instruction strategy of the mother's interaction strategy had a significant positive predictive effect on the child's use of the Attract attention strategy (C1), and the explained variance of these two strategies totaled 22.9%. Second, the mother's Ask a question strategy significantly and negatively predicted the child's Ask a question strategy (C2), and its explainable variance for the child's Ask a question strategy was 11.9%. Third, for the child's Open-ended strategy (C3), the mother's Open-ended strategy significantly and negatively predicted the child's Ask a question strategy, with 11.8% of the variance explained. Fourth, the mother's Ask a question strategy also positively predicted the child's Feedback strategy (C5), with 28.7% of the explained variance. Fifth, the child's Propose evaluation strategy (C7) was significantly negatively predicted by both the mother's Attract attention strategy and positively predicted by the mother's Repeat or clarify strategy, with a total of 11.7% of the explained variance for both strategies. Sixth, the child's Provide information strategy (C8)

Table 4. Regression analysis of mother's interaction strategy and child's interaction strategy.

Dependent variable	Independent variable	B	SE	β	t	Adjusted R^2	F
C1	Constants	−0.016	0.011		−1.497	0.229	11.814***
	M1	0.780	0.205	0.393	3.797***		
	M10	0.139	0.054	0.266	2.574*		
C2	Constants	0.147	0.024		6.219***	0.119	10.884**
	M2	−0.263	0.080	−0.362	−3.299**		
C3	Constants	0.144	0.024		6.111***	0.118	10.753**
	M3	−0.261	0.079	−0.360	−3.279**		
C5	Constants	0.395	0.056		7.050***	0.287	28.944***
	M2	0.840	0.156	0.535	5.380***		
C7	Constants	0.005	0.004		1.140	0.117	5.855**
	M1	−0.185	0.091	−0.229	−2.021*		
	M9	0.203	0.064	0.361	3.178**		
C8	Constants	−0.008	0.018		−0.440	0.372	22.641***
	M5	0.397	0.091	0.404	4.346***		
	M7	1.178	0.243	0.451	4.849***		
C9	Constants	0.010	0.023		0.441	0.044	4.343*
	M8	0.123	0.059	0.239	2.084*		
C10	Constants	0.156	0.051		3.085**	0.194	6.851***
	M10	0.372	0.150	0.276	2.482*		
	M1	−1.414	0.541	−0.277	−2.614*		
	M2	−0.250	0.114	−0.244	−2.197*		

Note: C1 (child's Attract attention strategy), C2 (child's Ask a question strategy), C3 (child's Open-ended strategy), C4 (child's Yes/no strategy), C5 (child's Feedback strategy), C6 (child's No response strategy), C7 (child's Propose evaluation strategy), C8 (child's Provide information strategy), C9 (child's Repeat or clarify strategy), C10 (child's Task instruction strategy); M1 (mother's Attract attention strategy), M2 (mother's Ask a question strategy), M3 (mother's Open-ended strategy), M4 (mother's Yes/no strategy), M5 (mother's Feedback strategy), M6 (mother's No response strategy) M7 (mother's Propose evaluation strategy), M8 (mother's Provide information strategy), M9 (mother's Repeat or clarify strategy), M10 (mother's Task instruction strategy). *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

was positively predicted by both the mother's feedback strategy and the Propose evaluation strategy, which had a total of 37.2% of explainable variance. Seventh, the mother's Provide information strategy could positively predict the child's Repeat or clarify strategy (C9) with 4.4% of their explainable variance. Eighth, the use of the child's task instruction strategy (C10) could be predicted by the combined effect of three variables: the mother's Attract attention strategy, the Ask a question strategy, and the task instruction strategy. Among them, mother's task instruction strategy could positively predict child's task instruction strategy, while mother's Attract attention strategy and Ask a question strategy

negatively predicted child's task instruction strategy, and their joint explainable variance was 19.4%.

From the above data, we can see that the mother's interaction strategies that had the strongest predictive power for the use of the child's interaction strategies were the mother's feedback strategy and the Propose evaluation strategy, which had the strongest positive predictive effect on the use of the child's Provide information strategy (C8), reaching a total of 37.2%. This was followed by the mother's Ask a question strategy, which had a positive predictive effect of 28.7% on the child's Feedback strategy (C5). Finally, it was the mother's Attract attention strategy and the task instruction strategy, both of which had a positive predictive power of 22.9% on the use of the child's Attract attention strategy (C1).

4. Discussion

4.1. Overall Development

The purpose of this study was to investigate the interaction strategies and language skills development used by Chinese mothers during mother-child joint book reading when their children were 3 to 6 years old. In response to the first research objective, the present study found that mothers' MLU during Chinese mother-child joint book reading was highest at the age of 3 years, which is consistent with previous studies on Chinese language background (Chang et al., 2016), the younger the child was, the longer the mother's words were. In contrast, there was no significant difference in children's MLU between the ages of 3 and 6 years, which is consistent with the developmental pattern of children's language, and one study found that children's MLU ceased to develop significantly after about 42 months (Wells & Bridges, 1981). This reflects the universality and consistency of the language features that emerge during mother-child joint book reading in Chinese contexts.

For the second research objective, age differences in the interaction strategies used by each mother and child during joint book reading in China, we concluded that only the four strategies of attracting attention, giving feedback, providing information, and repeating or clarify by the mother differed significantly across the four ages of the child from 3 to 6 years old. The use of the mother's Attract attention strategy and the use of the Repeat or clarify strategy were both highest at the child's age of 3, which was significantly higher than the other ages. This is consistent with Chang and Huang (2016). Similar to the findings of the study on the strategies used by mothers of different social classes, the most common strategies used by mothers of 3-year-old children were attention request strategies. This reflects the basic characteristic of mothers' interaction strategy use at age 3, which emphasizes the child's attention and the regularity of language. This study also found that mothers' use of Provide information strategies was significantly higher at age 5 than at other ages, and feedback strategies were significantly higher at age 6. This is consistent with the findings of previous studies (Sénéchal et al., 1995), also further suggests that mothers are more in-

clined to develop the richness of information in their children's discourse when they are older, to provide more information, as well as to train their children's complete flexibility in language, to give feedback, and to facilitate their children's learning and adjustment to language. These differences in the use of different interaction strategies by mothers between age groups further reflect the pattern of Chinese mother-child language interaction during joint book reading. That is, during joint book reading, Chinese mothers constantly adjust their interaction strategies as their children change in age. As the child grows older, mothers gradually decrease their attention to the child's attention and accuracy and increase their attention to the language content.

For the third and fourth research objectives, we found in the results of the correlation and regression analyses that the interaction strategies used by mothers and children during joint book reading were significantly correlated and largely positively correlated. Except for the mother's no response strategy, the various interaction strategies used by the mother and some interaction strategies used by the child were basically significantly correlated with each other. This is consistent with the results of several previous studies on interaction strategies (Cunningham & Stanovich, 1997). This suggests that the higher the frequency of these interaction strategies used by mothers in Chinese mother-child reading, the better the child's learning of the use of interaction strategies.

Among the eight regression models, the model of children's Provide information strategies has the highest explanatory power, reaching 37.2%, and the use of both the mother's feedback strategy and the Propose evaluation strategy were able to contribute more to the child's use of the Provide information strategy. This reflects that the mother's immediate feedback to the child during the interaction and her evaluation of the storyline can promote the child's ability to integrate information and verbalize the story during the interaction and better express words about the information during the interaction, which is consistent with Chang and Ya-Hui (2020), the results obtained from the study are consistent with the fact that talk about book information does promote children's language and story comprehension skills.

The next model is the child's feedback strategy model, with a model explanation of 28.7%, where the use of the mother's Ask a question strategy promotes the use of the feedback strategy to the child. The mother's questioning and the child's feedback actually reflect a question-and-answer interaction process, and the mother's use of Ask a question strategies can actually help the child learn more about how to answer and respond to questions, thus achieving the use of feedback strategies. Finally, the child's Attract attention strategy model, with an interpretability of 22.9%, shows that both the mother's Attract attention strategy and the Task instruction strategy can contribute to the child's Attract attention strategy. This is similar to the study of mother-child interaction states (Bus & van Ijzendoorn, 1997) that, especially in mother-child interactions at younger ages, mothers tend to take more proactive measures in the interaction. This sug-

gests that the mother's use of Attract attention and behavior engaging strategies also allows the child to learn how to attract the attention of others and promote language development in later joint book reading interactions.

4.2. Cultural Characteristics

The results of this study suggest that the development of interaction strategies in Chinese mother-child joint book reading exhibits cultural universals and specificities. In terms of cultural universality, the present study found that the Attract attention interaction strategy used by mothers during joint book reading was greatest when the child was 3 years old and then decreased, which is similar to the findings of some previous Western studies (Rowe, 2013; Sénéchal et al., 1995), in which parents typically use more Attract attention strategies when their children are younger. As children grow older, parents focus on using more complex interaction strategies and do not simply use these Attract attention strategies repeatedly. The study also concluded that mothers in Chinese contexts continue to adapt their interaction strategies as their children change in age. This is consistent with the findings of many studies on parent-child interactions in Western cultures with children of different ages (Bus & van Ijzendoorn, 1997; DeLoach & DeMendoza, 1987; DeTemple, 2001; Dickinson et al., 1992; Ninio, 1980, 1983; Rowe, 2013; Snow et al., 2001; van Kleeck et al., 1996; Wheeler, 1983). These reflect commonalities in the characteristics of mother-child interaction strategies used in different cultural contexts.

In terms of cultural specificity, there is no significant age-specific development in the use of interaction strategies during reading with mothers among Chinese children aged 3 to 6 years. Previous research has shown that children develop most through social interactions with their parents (Bruner, 1975). According to the Vygotsky and Cole (1978) the proposed model hypothesizes that mothers' interaction strategies during joint book reading promote children's development. This may be due to the fact that the child's use of interaction strategies will be influenced not only by the mother's interaction strategies but also by her own cognitive abilities and language skill development. Children's early cognitive abilities can further contribute to their subsequent language experiences (Song et al., 2014). Early maturing children are more sensitive to changes in their mothers' language interactions and are more likely to acquire more information and skills from their mothers, meaning that mother-child interactions are influenced by the child (Sameroff, 2010), and mother-child interactions may not be as effective when the child's cognitive and language skills are not yet mature.

4.3. Educational Implications

The results of this study suggest that the interaction strategies used by mothers in early mother-child joint book reading can positively predict the use of interaction strategies by their children.

On one hand, interaction strategies are an important part of language development during young children's reading. Related studies have also shown that mothers are sensitive to the development of their children's language skills and that their interaction strategies are closely related to their children's development (Chang et al., 2016). Therefore, Chinese mothers should be encouraged to ask questions, provide immediate feedback, and evaluate their children's reading interactions, i.e., ask questions, respond to children's questions, and comment on the storyline during the reading process. This promotes children's mastery and use of interaction strategies during reading, which in turn promotes their language development.

On the other hand, Children's learning of Attract attention strategies is influenced by their mothers' Attract attention and Task instruction strategies, and mothers should be aware of the use of these two interaction strategies when reading books with their children, especially when children are inattentive, and use different styles of these strategies, which children imitate and learn and which will appear more often in their future language. Whenever possible, parents should use calm, oriented language to correct inattentive behavior rather than a commanding tone, which helps children develop a more mature language pattern.

5. Limitations

This study has some shortcomings due to the objective conditions, which need to be improved in future studies.

Firstly, this study used a cross-sectional research design that was compared across age groups in a cross-sectional manner, and the findings were incomplete in terms of the causal relationships revealed. Therefore, future research could use longitudinal studies or combined cross-sectional studies, or experimental studies to more thoroughly explore the relationships between the interaction strategies used during mother-child joint book reading at different ages.

Secondly, the sample size of this study was relatively small due to the objective conditions. Nevertheless, the process of this study also took a lot of time for coding and integration of the language samples, and future studies can also try to do further research with a larger sample size on this basis.

Finally, although the current study considered age, we did not conduct more measurements to explore the effects of other factors on interaction strategies, so there may be confounding variables on the impact of the study, which requires future studies to explore more the mechanisms of the effects of other factors.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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