

Family factors and reading achievement: Chinese community perspective

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Abstract

This study examined family reading practices between Chinese community and non-Chinese community. Six family environmental factors were adopted, and they are parents' evaluation of child's early literacy skills, early home literacy activities (EHLA), reading activities between parents and children, parental attitudes and habits regarding reading, parents' reports of books in the home, and parents' reports of children's books in the home. Chinese community has Hong Kong, Singapore, and Taiwan. Non-Chinese community includes counterparts whose students' PIRLS reading achievement scores are similar to those in Chinese community. Using IDBAnalyzer and hierarchical multiple regression analysis, the results showed Chinese community parents had higher estimates of their children's early literacy skills, but lower reading activities between parents and children. Parents' attitudes regarding reading in Chinese community were relatively moderate, and the books at home are less than non-Chinese community families. However, children's book or books at home was an important predictor in both communities. It explained a significant 1% to 9% of variance of students' reading achievement after controlling children's early literacy skills. Although there were differences between two communities among six family reading factors, the regression pattern indicated that there was more similarity than difference between Chinese and non-Chinese communities.

Keywords: family environment factors, reading achievement, Chinese community

Introduction

Children are exposed to reading long before entering elementary schools. Home literacy experiences and reading resources provided by parents are identified as important factors in promoting children's reading development (Adams, 1990; DeBaryshe, 1993). Home-literacy environment is defined broadly as following aspects. One is about reading activities including early home literacy activities (EHLA), and daily reading activities between parents and children (Guthrie, Schafer, Wang, & Afflerbach, 1995; Sénéchal & LeFevre, 2002; Roberts, Jurgens, & Burchinal, 2005). The second one is about educational resources especially books provided by parents (Bus, van IJzendoorn, & Pellegrini, 1995; Campbell, Kelly, Mullis, Martin, & Sainsbury, 2001). The last one is about emotional factors, for example, the parental belief, expectations, attitudes and habits regarding reading (Baker, Scher, & Mackler, 1997; Rowe, 1991).

As demonstrated by Sénéchal and colleagues (Sénéchal, LeFevre, Thomas, & Darley, 1998), in the middle- and upper middle-class English-speaking parents who reported providing high frequency home literacy experiences for their children had various impacts on reading skills development, including oral language and reading strategy. For example, exposure to storybooks in childhood predicted children's vocabulary development, listening comprehension, and phonological awareness. And, direct teaching children printed words and how to read predicted first grade reading achievement.

Sénéchal and Lefebvre's study (2002) had similar results. They presented the final phase of a 5-year longitudinal study with 168 middle- and upper middle-class children. A model was used to represent the relationships among home literacy experiences and child reading achievement after controlling non-verbal intelligent score, age, frequency of parent print exposure, and parental education. The model showed that children's exposure to books was related to vocabulary development in the first grade, and that was directly related to children's reading achievement in grade 3. On the other hand, parents' direct teaching their children about reading and writing words was related to the development of early literacy skills. And early literacy skills directly predicted word reading at the end of grade 1 and indirectly predicted reading in grade 3. Thus, parental involvement in early literacy skills development including exposure to books and teaching children about reading and writing words had a certain degree of impact on children's later reading.

Bus, van IJzendoorn, & Pellegrini (1995) also supported this observation by using a meta-analysis on studies examining parent's frequency of book reading to preschoolers. Their results showed parent-preschooler reading was related to children's language growth, emergent literacy, and reading achievement. The frequency of book reading explained about 8% of the variance in language growth, emergent literacy, and reading achievement.

Why book reading promotes reading skills? It is assumed that parents reading books to or with children is exposed them to word components and grammatical forms of written language. Moreover, Sénéchal and colleagues (1998) had found that joint-book reading was often initiated by their child, suggesting that exposure to books implicitly inspired children interested in book reading.

As to the educational resources, quantity of books at home is an important predictor of student achievement (Campbell, Kelly, Mullis, Martin, & Sainsbury, 2001). The PIRLS 2006 International Report has indicated if students had more than 100 books in their home their average achievement was around 553, otherwise, 462 if less than 10 books (Mullis, Martin, Kennedy, & Pierre, 2007).

For these reasons, we could expect a print rich home environment positively correlating with children's reading achievement. Enrich reading resources such as books and reading activities between parents and children whether during preschool or school phase predict

children's reading achievement.

Moreover, attitudes influence children's reasons for reading, their feelings about reading, their readiness for reading and beliefs about reading. It has been found that positive attitudes and high motivation were associated with reading achievement and the habit of reading (Baker, Scher, & Mackler, 1997; Chapman, & Tunmer, 1995; Tse, Lam, Lam, Chan, & Loh, 2006). Children's attitudes are generally considered to be influenced by people around them. Parents and teachers who enjoy reading tend to pass these attitudes on to children and students (Tse, Lam, Lam, Chan, & Loh, 2006). Therefore, in addition to home environment, parents who were responsive, supportive, and interested in children's behavior, and who provided structure and a positive emotional climate at home had an impact on children's language and literacy development. Mothers who believed that reading was enjoyable read more frequently to their children and conversed more with them during shared reading. The children of mothers holding these beliefs showed greater interest in reading (DeBaryshe, 1995). Parental belief about literacy was not only an important key related to activities in which parents engage with their young children (Lynch, Anderson, J., Anderson, A., & Shapiro, 2006) but also in relation to preschool children's language and literacy competencies (Bennett, Weigel, & Martin, 2002). However, only a few study emphasized parental reading attitudes on children's reading behavior or achievement (Baker, Scher, & Mackler, 1997).

Previous research on home literacy and children's reading ability was mainly conducted in western cultures. Lau and McBride-Chang (2005) examined the relationship between home literacy and early reading development in Hong Kong. Their study showed home literacy experiences and children's literacy self-efficacy explained 19% of the variance in Chinese second grade children's reading skill. The number of books owned by children significantly correlated with children's word reading, and a greater exposure to a variety of books was related to more enjoyable reading interactions between parents and children. Lau and McBride-Chang's results were similar to western studies.

It is no doubt that home-literacy environment is correlated with children's reading achievement. More early literacy activities, more reading interactions between parents and children, and greater exposure to books are predictors of primary school students' reading ability whether the student is in Western or Chinese community.

However, when researchers looked into PIRLS 2006 International report, there seemed to be a trend that Chinese community includes Hong Kong, Singapore and Taiwan was different from non-Chinese counterparts in the aspect of family reading involvement. For example, Chinese community parents did less reading activities with their children. And most of them showed a medium positive attitude toward reading. Is it a cultural difference? It is the purpose of this study to clarify the cross-cultural phenomenon by taking advantage of PIRLS data which covered 4th grade students across 45 countries and areas. In addition, parent's reading attitude on child's reading achievement is relatively less discussed (Baker, Scher, &

Mackler, 1997). PIRLS test has provided a sophisticated model of reading comprehension and reading environment responded by parents and schools. By using the IDBAnalyzer, this study aimed to consider whether diversity patterns exist between Chinese community and non-Chinese community in ways family factors operated to influence student's achievement.

Method

Participants

The subjects were from Chinese community and non-Chinese community. A total of 8 groups were selected in the study. Chinese community included Hong Kong, Singapore, and Taiwan. Based on the result of PIRLS 2006, non-Chinese community counterparts were those whose students' scale scores were similar to students of Chinese community. They were Russian Federation, Canada (Alberta), Canada (British Columbia), and Canada (Ontario) whose students' achievement was not statistically different from Hong Kong and Singapore students. In Taiwan's case, Canada (Quebec) was chosen for its students reading achievement was not significantly different from Taiwan's (Table 1).

There were 36,540 students in total, including 4712 students from Hong Kong, 6,390 students from Singapore, 4,589 students from Taiwan, 4,243 students from Canada (Alberta), 4,150 students from Canada (British Columbia), 3,988 students from Canada (Ontario), 3,748 students from Canada (Quebec), and 4,720 students from Russian Federation. All students were aged between nine and ten at the testing time.

[Take in Table 1 about here]

Measurements

Students' reading achievement scale score was taken from PIRLS 2006. The overall reading plausible values were standardized around a mean of 500 and a standard deviation of 100 where all countries are weighted equally.

Family factors were adopted from the *Learning to Read Survey*. This study was interested in six family environment factors which including parents on child's early literacy skills, early home literacy activities (EHLA), reading activities between parents and children, parents' reports of books in the home, parents' reports of children's books in the home, and parents' attitudes and habits regarding reading.

Child's early literacy skills items included child could recognize most of the letters of the alphabet, read some words, read sentences, write letters of the alphabet, or write some words. Parents or caregivers were asked to respond on a four-point scale to indicate their child's level when they begin first grade.

The early home literacy activities (EHLA) asked parents or caregivers to respond a

three-point scale of frequency of the following activities they engage in with their child prior to entry into primary school. Activities were to read books, tell stories, sing songs, play with alphabet toys, play word games, and read aloud signs and labels. The EHLA were divided into three levels: high, medium, and low. High level indicated an average score greater than 2.33 to 3. Low level indicated an average score of 1 to less than 1.67, and medium level were in between.

Aligned with the child's early literacy skills, reading activities between parents and children asked parents or caregivers to respond by using a four-point scale of frequency of activities they engage in with their child when they at home. The reading activities between parents and children were divided into three levels: high, medium, and low based on their average scores.

The books, not included magazines, newspapers or children's books in the home were reported by the parents on a five-point scale: 0-10 books, 11-25 books, 26-100 books, 101-200 books, and more than 200 books. The children's books in the home, not included children's magazines or school books was also on a five-point scale: 0-10 books, 11-25 books, 26-50 books, 51-100 books, and more than 100 books.

Parents' attitudes and habits regarding reading were asked parents to respond on a four-point scale of agreement. Items were listed below:

1. I read only if I have to.
2. I like talking about books with other people.
3. I like to spend my spare time reading.
4. I read only if I need information.
5. Reading is an important activity in my home.

For statistical purpose, the negative statements ("I read only if I have to" and "I read only if I need information") were reverse-coded. The reading attitude was divided into three levels: high, medium, and low based on their average scores.

Data analysis

To explore the similarities and differences between Chinese community and non-Chinese community, the IDBAnalyzer was used to analyze frequency distribution of six family environment factors. To test whether family environment factors had different patterns in the two communities, hierarchical multiple regression analysis was applied by controlling child's early literacy skills.

Results

In order to gain insight into the values of the different family environmental factors in the two communities, a number of descriptive analyses were undertaken. The frequency of child's early literacy skills are presented in Figure 1. A significant F ratio for the child's early

literacy skills reflected differences between the eight groups ($F_{(7, 32614)} = 666.30, p < .001$). Hong Kong ($M = 3.34, SD = .54$), Singaporean ($M = 3.31, SD = .59$) and Taiwan ($M = 3.20, SD = .58$) parents had slightly more positive confidence on their children's literacy skills than their non-Chinese counterparts (Table 2). Figure 1 showed 51.57% parents in Hong Kong, 53.39% in Singapore, 43.54% in Taiwan thought child's early literacy skills very well. It was much higher when compared to the highest 28.47% parents in non-Chinese community.

As to the early home literacy activities between parents and children among the eight groups, non-Chinese parents did more activities ($F_{(7, 31987)} = 1085.53, p < .001$) than Singaporean ($M = 2.12, SD = .46$), Taiwan ($M = 2.06, SD = .43$), and Hong Kong parents ($M = 1.98, SD = .42$). The low EHLA proportion in Chinese community was higher than non-Chinese community (29.04% in Hong Kong, 20.04% in Singapore, 22.86% in Taiwan, 4.90% in Canada (Alberta), 5.74% in Canada (British Columbia), 5.38% in Canada (Ontario), 6.24% in Canada (Quebec), 4.16% in Russian Federation, Fig. 2). In contrast, more than 60% of non-Chinese community parents showed high EHLA. Comparing to non-Chinese parents, it seems to imply parents in Chinese community spent less time with their children on early literacy-related activities.

Reading activities between parents and children was also shown significant differences in the eight groups ($F_{(7, 32441)} = 398.88, p < .001$). Based on the analysis, it is displayed that Chinese community parents did less reading activities with children while children were in elementary schools (Fig. 3).

Figure 4 presents the statistics of parents' attitudes and habits regarding reading. The analysis of the mean at item level indicated that Canada (Alberta) parents ($M = 3.27, SD = .71$) and Canada (BC) parents ($M = 3.26, SD = .69$) had a stronger positive attitude than Canada (Ontario) and Canada (Quebec) parents ($M = 3.23, SD = .75$) ($M = 3.21, SD = .72$) which was stronger than Russian federation parents ($M = 3.04, SD = .66$), Taiwan parents ($M = 2.95, SD = .59$), Singaporean parents ($M = 2.91, SD = .59$), and Hong Kong parents ($M = 2.79, SD = .59$) ($F_{(7,31842)} = 307.80, p < .001$). Over 50% of parents in Chinese community tended to have moderate positive attitudes toward reading. The proportions of medium reading attitudes among them were 61.18% in Hong Kong, 50.53% in Singapore, 54.43% in Taiwan.

Finally, there are significant groups differences found in the books and children's books in the home (books: $F_{(7, 33239)} = 304.50, p < .001$; children's books: $F_{(7, 33270)} = 636.66, p < .001$). An analysis of the mean statistics showed that families in Chinese community have fewer books than families in non-Chinese community, whether books or children's books in the home. The proportions of more than 200 books in the home are 10.64% in Hong Kong, and 11.47% in Singapore, 15.17% in Taiwan. Only 9.36% family in Hong Kong has more than 100 children's books in the home. The proportions of 0-10 books in the home are 15.05% in Hong Kong, 16.07% in Singapore, and 19.26% in Taiwan. 26.29% family in Hong Kong has 0-10 children's books in the home, 8.67% in Singapore, 16.80% in Taiwan (Fig.5, Fig. 6).

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From the frequency analysis, there are rough pictures of the Chinese community and the non-Chinese community concerning families orientation toward children's reading. Next, hierarchical multiple regression analysis was conducted to test whether family environment factors had different contribution in Chinese and non-Chinese communities. The potential control variable for the regression was child's early literacy skills at the beginning of primary school. The regression showed that child's early literacy skills at the beginning of primary school explained a significant 4%-21% of variance in children's reading achievement. Next to child's early literacy skills, children's books or books in the home were the second factor explained significant 1%-9% of variance in children's reading achievement in both Chinese and non-Chinese communities (Table 3). After these two factors, different patterns between Chinese and non-Chinese communities emerged. For non-Chinese community, except Canada (Alberta), all six factors were statistically significant predictors to their children's reading achievement. For Chinese community, after child's early literacy skills and children's books or books in the home, other family factors added very little even no explanation power to their children's reading achievement. The most obvious one was parents' reading attitude. It did not play a statistically important role in children's reading in Chinese community, but it explained significant 1-3% of variance in non-Chinese community children's reading achievement. In addition, there were individual differences. For example, a non-significant EHLA was found in Hong Kong's pattern. Books in the home were non-significant in Singapore's and Canada (Alberta)'s patterns.

[Take in Table 3 about here]

Discussion

This study examined the relationship between family environmental factors and students' reading achievement between Chinese and non-Chinese communities. According to the frequency analysis of six family environmental factors, parents of Chinese community have higher estimates on their children's early literacy skills, but have lower EHLA and reading activities between parents and children while students entering primary schools.

Parents' attitudes regarding reading in Chinese community seem to be moderate positive, and the books at home are less than books provided in the non-Chinese community. Although there are differences among these two communities concerning family's view on reading activities, the main contribution of family factors on reading achievement are somewhat but not quite different. The hierarchical multiple regression analysis showed child's early literacy skills at the beginning of primary school explained a significant 4-21% of variance in children's reading achievement across communities. After controlling children's early literacy skills, children's books or books in the home explained a significant 1-9% of unique variance in students' reading achievement. The differences among communities come from parents' reading attitude. In Chinese community, parents' reading attitude did not help to explain students' reading achievement, but it had statistically significant contribution around 1 to 2% of variance to student achievement in the non-Chinese community.

In sum, children's early literacy skills and the amount of books at home are the most important predictors of reading achievement. These two factors together could explain a significant 11-27% of variance in students' reading achievement across 8 groups. In Chinese community, these two factors are especially critical. For after these two, other family factors did little or no contribution to students' reading achievement.

The surprising factor was the parental attitudes and habits regarding reading which was mentioned in the literature as an indicator of children's language and literacy development (Bennett et al, 2002). In this study, it did help explaining at least 2% of variance of non-Chinese children's achievement. In Chinese community, it did not even enter the regression equation. Is it because the attitude factor confounded with other factors such as providing children books or EHLA? It has mentioned that parent's attitude toward reading related to their reading activities involving children (Lynch et al, 2006). In Chinese case, a conservative expression of opinion might be another plausible reason for this phenomenon. As indicated in the result, most Chinese community parents identified themselves as having medium reading attitudes when compared to parents of the non-Chinese community. Is these conservative opinions part of the social expectation or it reflects reality? Further exploration of this matter is necessary to see the cultural impact on reading development.

In conclusion, through difference analysis, non-Chinese parents demonstrate more parent-child reading interactions, providing more books and having more positive reading attitudes than their Chinese counterparts. Parents of Chinese community only have higher estimates on their children's early literacy skills than their non-Chinese parents have. With regression analysis, individual difference in regression patterns does exist among different groups. However, children's early literacy skills and the amount of books at home are the most prominent predictors of children's reading achievement among all. The rest factors predict less or none to reading across groups, especially in Chinese community.

The purposes of the present study, the main focus was on the similarities and

differences between Chinese community and non-Chinese community. Although Chinese community parents did not involve themselves much with children's reading and their attitude toward reading is moderate, with the result of regression, it is justified to say that there is more similarity than differences across communities concerning reading achievement in regard to family's contribution.

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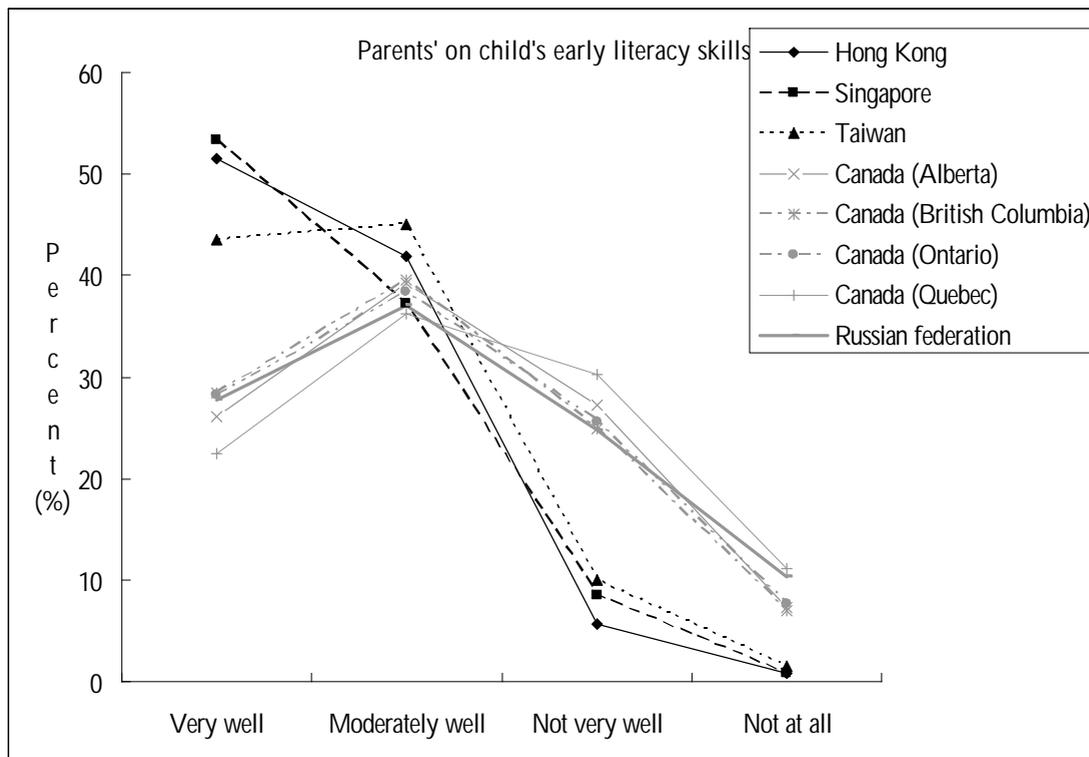


Fig. 1 Parents responses on child's early literacy skills

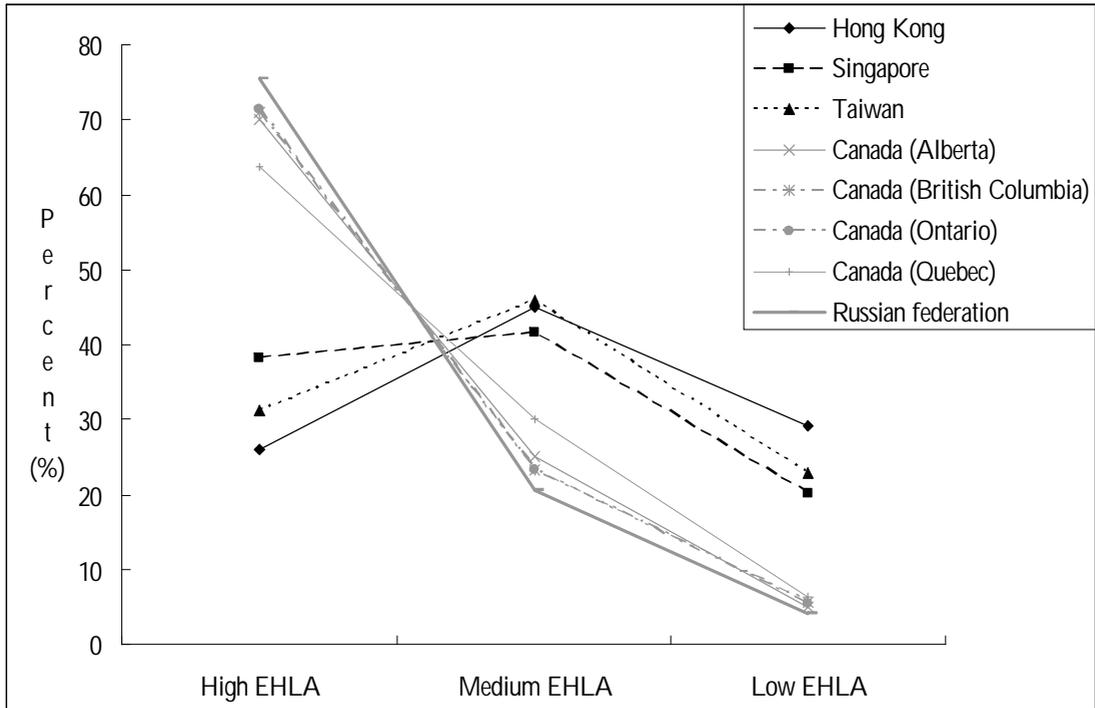


Fig. 2 Early home literacy activities (EHLA) between parents and children

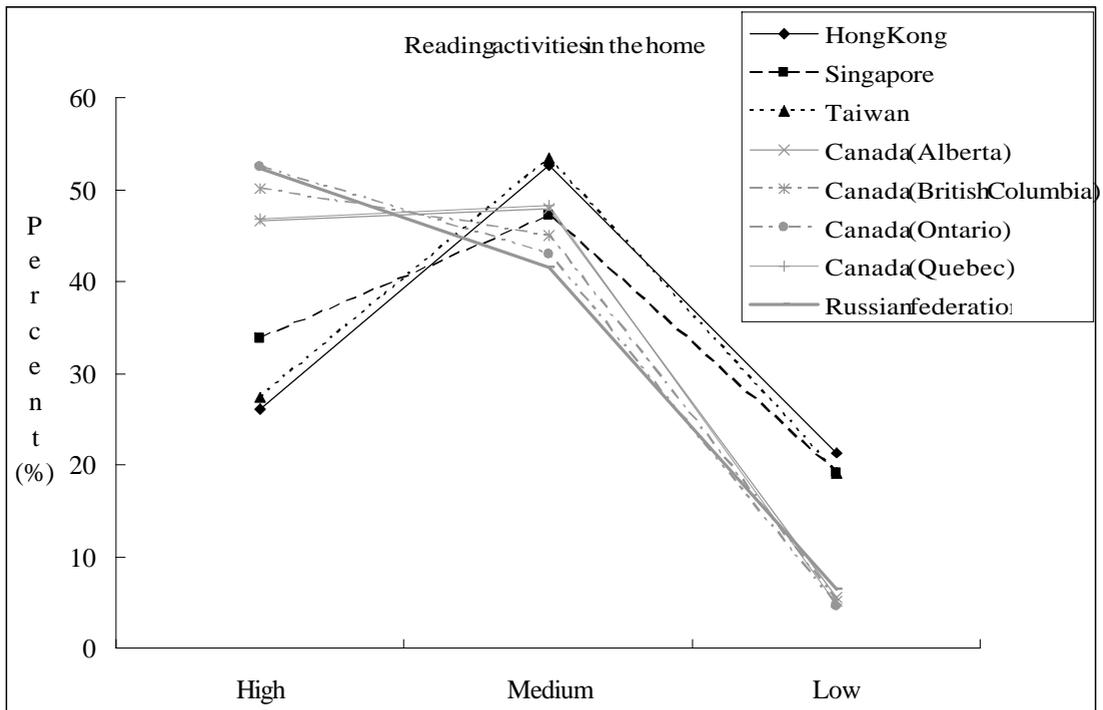


Fig. 3 Reading activities between parents and child in the home

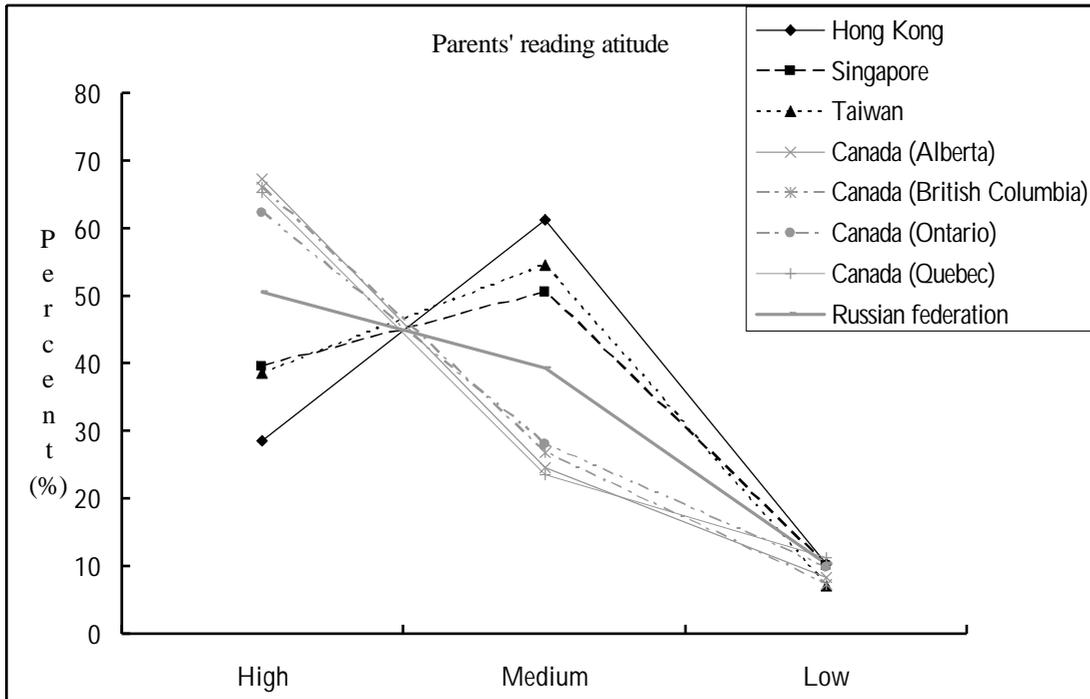


Fig. 4 Parents' reading attitude

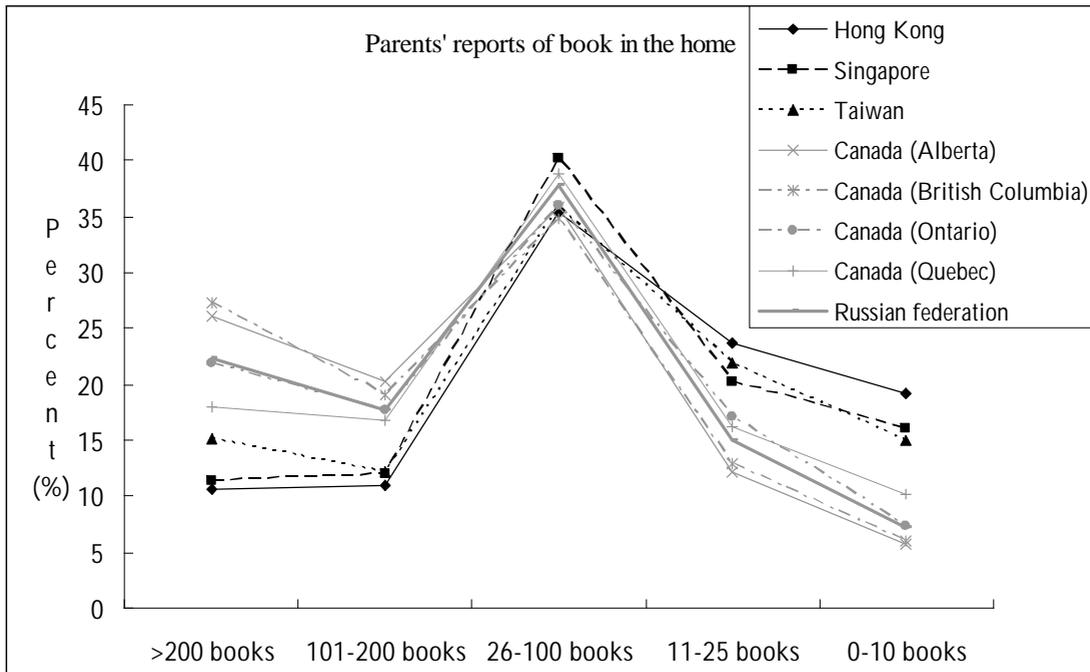


Fig. 5 Parents' reports of books in the home

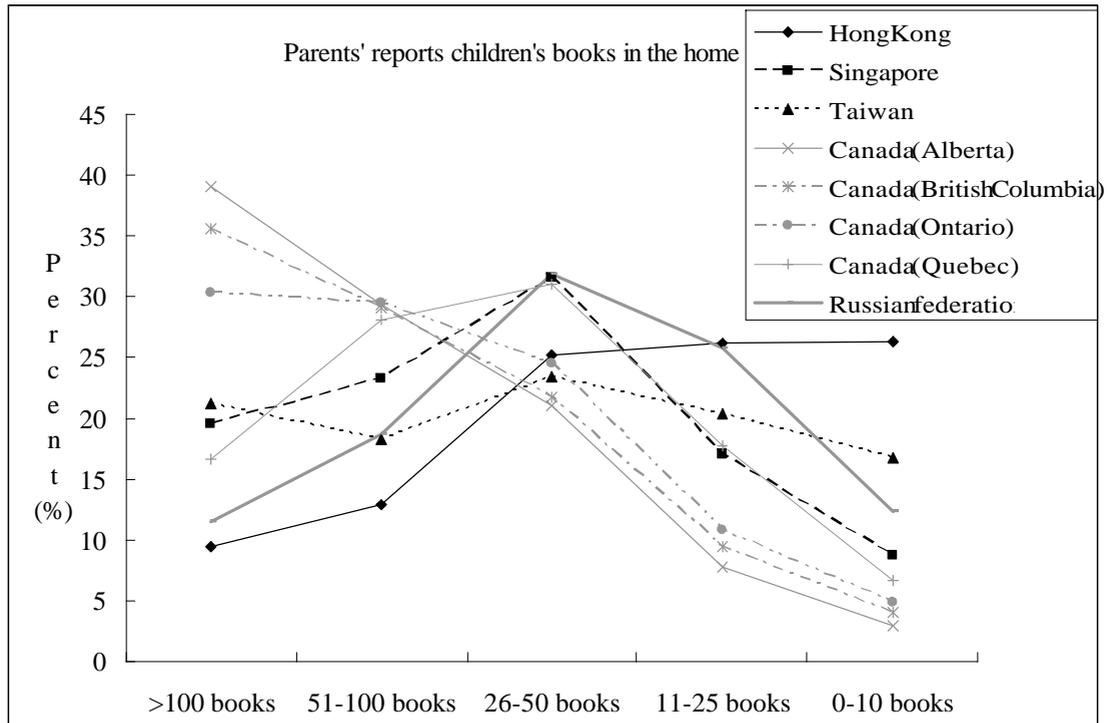


Fig. 6 Parents' reports of children's books in the home

Table 1 Average scale score and average age in two communities

Area	Countries	Average Scale Score	Average Age
Chinese community	Hong Kong	564(2.4)	10.0
	Singapore	560(2.4)	10.4
	Taiwan	535(2.0)	10.1
non- Chinese community	Canada (Alberta)	560(2.4)	9.9
	Canada (British Columbia)	558(2.6)	9.8
	Canada (Ontario)	555(2.7)	9.8
	Canada (Quebec)	533(2.8)	10.1
	Russian federation	565(3.4)	10.8

Table 2 Means of 8 groups by each of family environment factors

	child's early literacy skills	EHLA	reading activities	parental reading attitude	books in the home	children's books in the home
Hong Kong	1 (3.34)	8 (1.98)	8 (2.62)	8 (2.79)	8 (2.70)	8 (2.53)
Singaporean	1 (3.31)	6 (2.12)	6 (2.74)	7 (2.91)	7 (2.79)	5 (3.20)
Taiwan	3 (3.20)	7 (2.06)	7 (2.66)	6 (2.95)	6 (2.92)	6 (3.09)
Canada (Alberta)	6 (2.79)	2 (2.46)	4 (3.00)	1 (3.27)	1 (3.49)	1 (3.96)

Canada (BC)	4 (2.84)	2 (2.45)	1 (3.04)	1 (3.26)	1 (3.47)	2 (3.80)
Canada (Ontario)	6 (2.75)	2 (2.46)	1 (3.06)	3 (3.21)	4 (3.31)	3 (3.70)
Canada (Quebec)	8 (2.70)	5 (2.39)	4 (3.00)	3 (3.23)	5 (3.23)	4 (3.44)
Russian federation	4 (2.84)	1 (2.50)	3 (3.03)	5 (3.04)	3 (3.40)	7 (2.98)

(Number represents the order, when numbers are the same, it means the two groups' means are not statistically different. Number in parentheses represents the means of family environment factors)

Table 3 Hierarchical multiple regression analysis

	Hong Kong			Singapore			Taiwan				
	R ²	ΔR ²	F	R ²	ΔR ²	F	R ²	ΔR ²	F		
1. Early Literacy Skills	.18	.18	850.98***	1. Early Literacy Skills	.21	.21	1545.81***	1. Early Literacy Skills	.09	.09	378.83***
2. children's books	.19	.01	60.03**	2. children's books	.27	.05	415.90***	2. children's books	.18	.09	.419.40***
3. reading activities	.19	.00	11.17**	3. reading activities	.27	.01	55.18**	3. books	.20	.02	69.92***
4. books	.19	.00	4.00*	4. EHLA	.28	.00	23.14**	4. EHLA	.20	.01	27.13***
								5. reading activities	.20	.00	16.29***

Table 3 continued.

	Canada (Alberta)			Canada (British Columbia)			Canada (Ontario)				
	R ²	ΔR ²	F	R ²	ΔR ²	F	R ²	ΔR ²	F		
1. Early Literacy Skills	.07	.07	249.89***	1. Early Literacy Skills	.05	.05	161.85***	1. Early Literacy Skills	.07	.07	243.75***
2. children's books	.12	.05	160.37***	2. books	.12	.06	201.98***	2. children's books	.12	.05	189.56***
3. reading activities	.14	.02	69.48***	3. reading activities	.13	.02	65.08***	3. reading activities	.14	.01	51.24***
4. Reading attitude	.16	.02	88.16***	4. Reading attitude	.16	.02	75.89***	4. Reading attitude	.15	.01	51.90***
5. EHLA	.17	.01	31.27***	5. children's books	.17	.01	43.09***	5. EHLA	.16	.01	32.77***

6. EHLA	.17	.01	19.82	6.books	.16	.00	4.11*
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Table 3 continued.

	Canada (Quebec)			Russian federation			
	R ²	ΔR ²	F	R ²	ΔR ²	F	
1. Early Literacy Skills	.04	.04	122.47***	1. Early Literacy Skills	.18	.18	881.29***
2. children's books	.11	.07	232.46***	2. children's books	.22	.04	189.96***
3. Reading attitude	.13	.02	64.64***	3. reading activities	.25	.03	155.19***
4. reading activities	.15	.03	90.01***	4. Reading attitude	.26	.01	51.27***
5.EHLA	.16	.01	42.13***	5.EHLA	.26	.01	35.17***
6. books	.17	.00	12.62***	6. books	.26	.00	11.67***