

## Educational gradient in childcare time in China, Japan, Korea, Finland and the UK

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### Abstract

We analyse the relationship between parents' education and childcare time in China, Japan, and Korea and select the latest data from the UK and Finland as a benchmark for comparison. We select couples with children from the newly harmonised time use data during the 2000s-2010s. We use seemingly unrelated regression linear models to show how couples jointly determine their childcare time. The educational gradients are similar across East Asian countries and are relatively weaker than that in the UK or even Finland. Mother's and father's education play different roles. The critical role of the father's education in shaping the mother's childcare time is found in Japan and the UK. We will incorporate reviews about the country-specific education system, gender and income inequalities, and returns to education to offer some explanations to these cross-country differences. This comparative approach sheds lights into how the various regime systems shape the intergenerational transmission process.

### Introduction and research question

Whether and to what extent people with different educational levels spend different amount of time on childcare has always been a central research and policy concern. Childcare time is essential for the children's cognitive and non-cognitive development and work as a key mechanism for intergenerational transmission of cultural capital (Brilli, Boca and Monfardini 2013; Fomby and Musick 2018). Childcare time also reflects the parenting norm and the desire to advance the family's prospect by enhancing the children's development and achievement.

Previously studies have analysed the educational gradient in childcare time in Western and North American industrialised countries such as the United States (US) (Altintas 2015; England and Srivastava 2013), the United Kingdom (UK) (Gracia 2015), and Spain (Gimenez-Nadal and Molina 2013). These studies have identified a positive educational gradient in childcare time across developed countries (Dotti Sani and Treas 2016). Country-level variations are also noticed. Countries like the US and Slovenia seem to have the biggest educational gradient in childcare time (Dotti Sani and Treas 2016), and also large gaps among fathers during weekends are observed in Spain the UK (Henz 2019) (Gracia and Ghysels 2017). Lastly, mothers' education often plays a more critical role than fathers' education in time spent on childcare (England and Srivastava 2013; Gimenez-Nadal and Molina 2013).

Little work has put East Asian societies into this comparative framework. In East Asian societies, the educational aspirations of both the parents and the children are particularly high. Competitions into good colleges are fierce. As a fast-shifting region, it is important to understand how parents interact with their children in East Asia. In this paper, we evaluate whether there is any educational gradient in these East Asian countries, what is the respective roles of the mother's and father's education, and whether the educational gradient in childcare time is more prominent compared to western societies.

### Theoretical framework and Literature Review

The link between education and parental investment in childcare activities is expected to be positive. People of high education have resources, such as knowledge, skills, and money, to engage in parenting activities that could boost children's development (Dotti Sani and Treas 2016). Differences in childcare time

could also be attributed to the different expectations and parenting values. Different cultural conceptions of childrearing are supported by one study using the American 2003 to 2011 time-use data. In this study, the effects of education do not change much after a further inclusion of earnings and housework (England and Srivastava 2013), underscoring the salience of the parenting values. Moreover, people of more education may perform parenthood in a specific way to differentiate themselves from those in other social class. The spread of “intensive parenting” norm that features a “child-centred, expert-guided, and labour intensive” way of parenting is also “consistent with class-based ideals of intensive parenting” (Gauthier, Smeedeng and Furstenberg 2004).

Empirical studies highlight the significance of parental education in childcare time. In the US, the gap is a striking 4.5-hour difference per week between mothers with a college education or above and mothers with a high school degree or below, based on a sample from the 2003-2006 American Time Use Survey (Guryan, Hurst and Kearney 2008). One study (Gracia and Ghysels 2017) analysed time-use data in Belgium (2005), Denmark (2001), Spain (2003), and the United Kingdom (2000) and noted that, for mothers, the educational gradient in childcare time is only observed in Spain and the UK. For fathers, the educational gradient is noted in Belgium and Spain in the early 2000s.

On the other hand, the positive link between education and childcare time is also surprising. People of more education are more likely to be employed and have higher earnings. Therefore, parents of more education should have a greater opportunity cost for time spent on non-income gaining activities such as childcare. Nonetheless, given the positive link between time investment and child’s outcomes, more educated parents may be more likely to direct their non-working time with children as much as possible, engage in educational activities with the children, and refrain from outsourcing childcare to substitute their own parental time.

There is also a gendered pattern of the influence of parental education on their time devoted to childcare. Women’s education influences both their own and their spouse’s childcare time; and the educational gradient spent by the fathers is often considered to be spurious (England and Srivastava 2013; Gimenez-Nadal and Molina 2013). The determining role of the mother’s education is observed in Denmark, the UK, and the US (Gracia and Esping-Andersen 2015). But there are certain activities where the father’s educational gradient is not affected by the mother’s education. These activities mostly involve managerial or developmental childcare activities (Altintas 2015). The positive link between the wife’s education and the father’s childcare time also is not observed in Spain (Gimenez-Nadal and Molina 2013). In this paper, we incorporate the educational levels of both parents to predict the mother’s and the father’s childcare time simultaneously to explore this cross-partner and gendered pattern in childcare time.

## Data and Sample

We analyse time use data from China (2008)<sup>1</sup>, Japan (2006), Korean (2009, 2014), Finland (1999, 2009), and the UK (2000, 2014). Data from the last three countries are from the Multinational Time Use Study.<sup>2</sup> And we harmonised China and Japan dataset following the MTUS standard. We select those countries because they include time-use information from all household members aged 10 or older,<sup>3</sup> which enable a couple-unit analysis to examine cross-partner influences. Like other time use surveys, open diary was used with intervals of 10 or 15 minutes for the diarist to fill in. Basic individual characteristics, such as gender, age, marital status, occupation, and education were collected. Time use diary is particularly useful when analysing people’s time spent in less organized activities such as housework and childcare. We select

<sup>1</sup> 10 provinces in covering all the large geographical regions in China (Beijing, Hebei, Heilongjiang, Zhejiang, Anhui, He’nan, Guangdong, Yunnan, Sichuan, and Gansu). We only select surveys done in urban areas.

<sup>2</sup> <https://www.timeuse.org/mtus>; Korean 2014 data is harmonized by ourselves.

<sup>3</sup> The age limit is 15-74 in China. Lower end of age is 12 in Japan.

opposite-sex couples with the female partner aged between 20 to 59 and at least one child aged under 18 in the household.<sup>4</sup>

## Measures and Methods

**Dependent variables:** We use time spent on childcare activities as a primary activity as the outcome variable. Data in Japan do not differentiate between various childcare activities. Although some studies show that educational childcare time is particularly beneficial to the children’s development, the total amount of childcare time is found to be important because it is positively linked to children’s reading scores and negatively linked to the children’s externalizing behaviours among adolescent (Fomby and Musick 2018).

**Independent variables:** Parental education has two categories: secondary or below and above secondary levels. Both the mother’s and the father’s education are included to consider the cross-partner effects. We control for the age of the youngest child, the parent’s employment status (whether employed), and household composition (number of people aged between 16–64 in the household, the presence of people older than 65 in the household). We also control for whether it is a weekday or a weekend and the year of the survey.

We follow Gimenez-Nadal and Molina’s approach (2013) and use a seemingly unrelated regression (SUR) system to estimate childcare time. This system considers joint household decisions and joint provision of childcare. For example, the time one parent spent on childcare could substitute the other parent’s time on childcare. For each household, two equations are used to estimate childcare time by both the wife and the husband. Correlations at the household level in the unobserved predictors of childcare time is allowed because in SUR, error terms are set to be jointly normally distributed. This setting considers that the childcare done by one partner could reduce the childcare time of the other partner.

## Descriptive findings

**Table 1** reports the averaged childcare time spend by the mother or the father on a typical day by country and education. To enhance the cross-country comparison, we adjusted the samples in each country to have the same educational distribution with 50% of the people having above secondary levels of education. Chinese mothers have the least amount of childcare time and Korean mothers spend the highest amount of time on childcare. Japanese fathers have the least amount of childcare time, and the UK and Finland fathers have the most. The positive link between the parents’ education and their childcare time is evident. The educational gap in childcare time for mothers is the smallest in China and the widest in Korea and Japan. For fathers, this gap is the smallest in Japan and largest in China and the UK.

**Table 1. Mean time in childcare by country and education**

		Same educational composition	Education: ≤ Secondary	Education: > Secondary	Difference
Mother	Urban China	67.5125	64.3882	70.6384	6.2502
	Japan	75.2189	60.7701	89.4627	28.6926
	Korea	120.13	102.631	141.263	38.632
	UK	88.8688	77.2108	96.737	19.5262
	Finland	87.3942	79.563	94.4577	14.8947
Father	Urban China	36.3732	29.7901	42.5559	12.7658
	Japan	13.3475	10.7569	15.6747	4.9178
	Korea	29.9959	23.2729	32.8973	9.6244

<sup>4</sup> The China time use survey does not provide number of children information. We have included the number of children in other countries, and the results remain unchanged.

UK	40.6799	35.1379	48.3189	13.181
Finland	40.5321	38.1201	46.1475	8.0274

## Regression results

**Table 2. Differences in childcare time across East Asian countries, the UK, and Finland**

	Urban China		Japan		Korea		UK		Finland	
	Mother's time	Father's time	Mother's time	Father's time	Mother's time	Father's time	Mother's time	Father's time	Mother's time	Father's time
Education (ref: =< Secondary)										
Mother >secondary	10.31*** (2.92)	2.028 (2.16)	12.00*** (0.97)	3.205*** (0.45)	14.30*** (2.12)	6.355*** (1.14)	17.38*** (3.25)	9.699*** (2.44)	19.45*** (4.87)	3.522 (3.57)
Father >secondary	-1.792 (2.75)	12.67*** (2.04)	8.806*** (0.97)	2.442*** (0.44)	3.612* (1.93)	3.712*** (1.03)	13.61*** (3.22)	9.435*** (2.42)	5.653 (4.57)	4.685 (3.35)
Constant	496.7*** (28.84)	221.0*** (21.47)	415.0*** (17.82)	76.06*** (8.87)	459.8*** (28.17)	130.3*** (15.17)	123.4* (70.36)	19.44 (53.49)	290.5 (191.10)	-14.27 (144.60)
Observations	6,429	6,429	61,379	61,379	12,256	12,256	3,612	3,612	2,091	2,091
R-squared	0.106	0.032	0.386	0.084	0.504	0.184	0.385	0.201	0.479	0.248

Models include whether mother and father are employed, age of the youngest child, mother's and father's age and squared terms, number of people aged between 16-64 in the household, whether having people older than 65 in the household, whether it is a weekday  
Standard errors in parentheses (\*\*\*) p<0.01, \*\* p<0.05, \* p<0.1)

**Table 2** reports the educational gradient across the five countries. The relationship between mother's education and her childcare time is similar across the countries. Women with above secondary level of education spend 10 to 19 minutes more in childcare. Interestingly, there is also a very strong positive link between the father's education and the mother's childcare time in Japan and the UK. Father's education is associated with the father's childcare time, but the difference is particularly small in Japan, Korea, and Finland. The gap between fathers of different education is particularly large in China and the UK. The importance of the mother's education in shaping the father's childcare time is also noted, especially in Korea and the UK. If people with similar education marry, the gap in childcare time between parents with secondary or lower education and those with above secondary education would be 23, 27, 28, 50, and 33 minutes per day in China, Japan, Korea, the UK, and Finland. The educational gradient in the UK is striking compared to other countries, underscoring a strong potential of the persistent transmission of inequality over generations.

## Conclusion and future work

The positive link between education and childcare time is confirmed in the three East Asian countries. Mother's childcare plays a dominant role in Japan, Korea, and Finland, whereas both the mother's and the father's childcare time are important in enlarging the educational gradient in childcare in China and the UK. We have also noted the importance of the father's education in shaping the mother's childcare time in Japan. In the UK, the education of both partners seems to influence each other's childcare time. Interestingly, the educational gradient is weaker in East Asia countries than in the selected Western countries. Differences in the educational system could be an explanation. The long hours at school in China and the booming private tutoring industry in Japan and Korea may restrict the extent of variations in the involvement of the parents. Economic positions, employment status, and housework time may work as mediators to the relationship between education and childcare time, though it is not supported in the US (England and Srivastava 2013). We could test these mechanisms by further including income. This information is missing in China, Finland, and the UK and could be imputed with similar samples in other

datasets. We would also provide a review on the educational system, income inequality, and returns to education across the five countries to provide contextual backgrounds and explanations.

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